REPORT

of a

SURVEY OF TRANSPORTATION

on the

STATE HIGHWAYS OF NEW HAMPSHIRE

by

THE BUREAU OF PUBLIC ROADS
U. S. DEPARTMENT OF AGRICULTURE

and

THE NEW HAMPSHIRE STATE HIGHWAY DEPARTMENT

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TABLE OF CONTENTS

Foreword

THIS report contains the results of highway traffic studies of the trunk-line, State-aid and town-road systems of New Hampshire conducted during 1926 under a cooperative research agreement between the Bureau of Public Roads, United States Department of Agriculture, and the New Hampshire State Highway Department.

The investigation was undertaken in order to obtain essential facts concerning traffic on New Hampshire highways, and the condition of present highway improvements as a basis for planning the development of the State highway system to serve present and future traffic.

The conclusions are based upon the present density, type, loading and distribution of traffic, traffic units, and traffic classification of State highways, upon present population and population trends, upon predicted future traffic, and upon an economic and physical analysis of other factors influencing the planning of a program of highway improvement.

The first part of the report contains a summary of the principal conclusions, the second the detailed data of the survey upon which the findings of the report are based and the third the proposed plan of State highway improvement.

The researches were conducted under the joint supervision of Thos. H. MacDonald, Chief of the Bureau of Public Roads, and F. E. Everett, New Hampshire State Highway Commissioner. J. Gordon McKay, Chief of the Division of Highway Economics, Bureau of Public Roads, directed the work of the survey and preparation of the report, assisted by O. M. Elvehjem, Highway Economist, E. T. Stein, J. F. Hehir, and L. E. Peabody, Associate Highway Economists, all of the Division of Highway Economics, and C. P. Riford, Construction Engineer, J. W. Childs, Bridge Engineer, J. H. Johnson, Office Engineer and F. A. Gardner, Public Relations Engineer of the New Hampshire State Highway Department.

NEW HAMPSHIRE HIGHWAY TRANSPORTATION SURVEY

THE location, and to a considerable extent the improvement, of the trunk-line highway system in New Hampshire has been influenced by its extensive mountainous area and lakes and by the industrial development of the southeastern part of the State. The location of the principal highways follows the natural routes of travel, particularly in the northern and western sections.

For many years the State had no control over the development of its highway system. All road work was carried on under the supervision of county and town authorities, and, in consequence, there was no satisfactory improvement of a connected system of State roads. Endeavoring to correct this defect the legislature, in 1905, authorized the construction and maintenance of highways with State funds under the supervision of the State highway engineer, and in the following 10-year period the first effective steps were taken toward the development of a State system. In those ten years the trunk-line system was designated, its mileage was extended by successive legislatures, and fair progress was made in its improvement, chiefly by the construction of gravel surfaces and of bridges.

In 1915 the State highway department was placed in charge of a State highway commissioner. He was vested with complete control of all funds provided by the legislature for construction and maintenance of the trunk-line system, and this organization has remained unchanged.

The development of the State system from 1915 to 1926 has been marked by the extension of the mileage of the trunk-line system, the construction of a comparatively small mileage of surfaces superior to gravel, the reconstruction of a limited mileage of worn-out surfaces, and the surface treatment of gravel surfaces on the main traveled routes. Of the 1,435 miles of trunk-line highways in 1926, approximately 800 miles were improved with surface-treated gravel and 220 miles with surfaces superior to gravel. The improvement of so large a portion of the system with gravel surfaces has not been consistent with the requirements of traffic; but has been unavoidable in view of the rapid extension of the mileage of the system by the legislature and the relatively small funds provided for improvement—a condition which has been aggravated by the financial inability of the towns to meet State-aid funds necessary for proper surfaces in the poorer areas of the State.

The balanced development of a system of State-aid roads other than trunk-line routes has been limited in the same manner. It has been further complicated by the authority given local highway

administrators to approve or disapprove the location of roads of this class.

Funds available for highway improvement have not been increased in proportion to the need for highway improvement; and the steady increase in traffic has necessitated the expenditure of a proportionately larger amount for the maintenance of the gravel surfaces and left a smaller proportion of the total highway funds for the construction of surfaces superior to gravel. Although motor vehicle registration increased 9.2 per cent between 1925 and 1926 the increase in motor vehicle revenues was only 2.7 per cent; and the amount of revenue per motor vehicle, including gasoline taxation, decreased from $28.10 in 1924 to $26.79 in 1926.

Gravel is of common occurrence, and a large mileage of gravel roads have been constructed during the development period

Recognizing the need for an orderly plan of highway improvement in accordance with the present and expected future traffic importance of the various sections of the State highway system, the New Hampshire Highway Department entered into an agreement with the United States Bureau of Public Roads to conduct a cooperative survey of transportation requirements on the highways of the State during the period from July 16 to October 15, 1926.

The Results of the Survey

The results of the survey show that during the five-year period from 1927 to 1931 the State should construct 76 miles of gravel surfaces, 380 miles of surfaces superior to gravel and reconstruct 122 miles of the trunk-line system; and that during the five-year period from 1931 to 1936 it should construct approximately 69 miles of gravel surfaces, 340 miles of surface superior to gravel and reconstruct 24 miles, a total of 866 miles of trunk-line highways requiring new construction or reconstruction with surfaces superior to gravel during the ten-year period. Approximately 30 per cent of the system is improved with surfaces adequate for present traffic and that which may be expected between 1927 and 1936.

The highways comprising the trunk-line system —the most important traffic routes of the State— constitute 11.3 per cent of the total rural mileage. In 1926 they carried 69.4 per cent of the total rural traffic; whereas, the State-aid system, which includes 13.7 per cent of the total highway mileage, carried only 16.8 per cent of the traffic; and town roads, 75 per cent of the rural mileage, carried but 13.8 per cent of the traffic.

The average daily traffic density on these three highway systems was 916 on the trunk-line, 182 on the State-aid and 27 on the town roads.

The Federal-aid system, which embraces approximately 68 per cent of the trunk-line mileage carried 80.8 per cent of the total trunk-line traffic; and the U. S. numbered routes which make up approximately one-fourth of trunk-line mileage carried 38.1 per cent of the total traffic on the larger system. The average daily traffic density on the U. S. numbered routes was 1,496, and on the Federal-aid system, 1,088.

Of the 1,454 miles of the trunk-line system, 166 miles carried 1,500 or more vehicles per day, in 1926; 897 miles between 500 and 1,500, and 391 miles less than 500 motor vehicles daily.

Practically all routes carrying 1,500 or more motor vehicles daily are located in that part of the southeastern section of the State which, because of its traffic importance, has been designated as traffic section 1 (Fig. 9). Included in this section are parts of Rockingham, Strafford, Hillsborough, Merrimack, and Belknap Counties, which are more highly developed industrially and more densely populated than any other portion of the State.

Sections of the State-aid system carrying more than 500 daily vehicles are relatively few in number and short in mileage.

Approximately half of the passenger car traffic and one-tenth of the truck traffic on the trunk-line system was of foreign origin. Ninety-six miles of the system carried 1,000 or more foreign passenger cars daily, 192 miles between 600 and 1,000, 771 miles between 200 and 600 and 395 miles less than 200.

This foreign traffic, in many cases, increases the total traffic beyond the economic capacity of present surfaces where it would not otherwise be exceeded and increases maintenance costs and makes necessary earlier reconstruction.

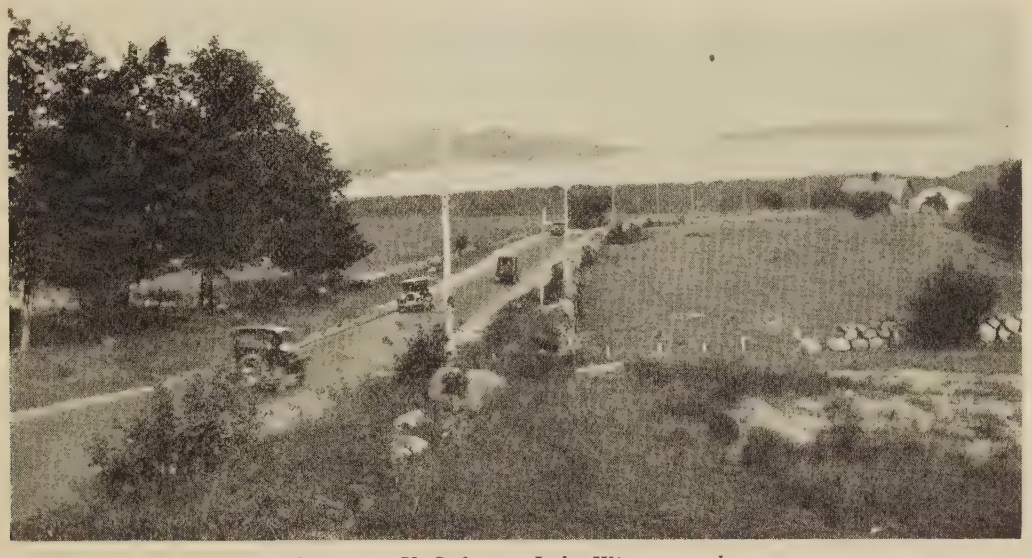
From the standpoint of motor truck traffic, traffic sections 1 and 2 (Fig. 9) are the most important motor trucking areas of the State, the former having a daily density of 94 trucks per mile of trunk-line highway; the latter 57. In traffic sections 3, 4 and 5, truck density per mile of trunk-line highway was from 39 to 30.

Of the 1,454 miles of the trunk-line system, 50 miles carried 200 or more trucks per day; 150 miles 100 or more, 350 miles from 50 to 99, 405 miles from 25 to 49, and 548 miles less than 25. Approximately two-thirds of the trunk-line system carried less than 50 trucks daily.

Of the 150 miles carrying 100 or more trucks per day 139 miles are located in traffic section 1. There were 221 miles of trunk-line highways on which there was a daily density of five or more 3 to 7½ ton trucks, of which approximately 35 miles carried an average of 25 or more and approximately 77 miles carried between 10 and 25 such vehicles; 86.9 per cent of the 221 miles are located in the traffic section 1.

Farm-owned passenger cars comprised 6.1 per cent and city-owned passenger cars 93.9 per cent of total passenger car traffic on the trunk-line system. Farm-owned trucks comprised 11.4 per cent and city-owned trucks 88.6 per cent of truck traffic on the trunk-line system.

Traffic section 1 is the most important traffic section of New Hampshire, with over half the population and registered motor vehicles of the State in less than one-fifth of the area. Local traffic originating in this area is large and is increased by the large volume of through traffic on the principal routes. Population is increasing slowly in the area and local traffic may therefore be expected to continue to increase. The principal need for high-type surfaces superior to gravel to meet traffic requirements will continue to be largely in this section.



On Route U. S. 3 near Lake Winnepesaukee

Traffic section 2 is somewhat similar to section 1, but is smaller in area and less highly developed industrially. It is increasing in population more rapidly than any other section, and the need for highway improvement may therefore be expected to increase more rapidly during the immediate future.

Traffic section 3 is decreasing in population and has a present low level of traffic. Local traffic will increase slowly, the principal need for high-

way improvement being on the routes carrying through traffic and the improvement of present unimproved gaps of the trunk-line system.

Traffic section 4 is small in area and its population is low and decreasing more rapidly than any other section of the State. This section is traversed by few through routes and its traffic requirements are limited.

Traffic section 5, although low in population and only slowly increasing, is an important tourist traffic area. Tourist traffic on the trunk-line system is of major importance and it will continue to increase with the further development of recreational resorts. A considerable part of the trunk-line system of this area will require surfaces superior to gravel, but not of the same type of construction as in traffic section 1 because of the relatively minor importance of motor truck traffic.

A gravel road constructed with Federal aid on Route 107 *near Tuftonboro*

The Forecast of Future Traffic

The present density of traffic on the various sections of the trunk-line system is used as the basis for an estimate of traffic on these sections in 1931 and 1936, applying for this purpose the relation between increase in registration and increase in traffic on the highways as observed in several States, and the probable ratio of population to motor vehicles as determined from observations in New Hampshire and other States. In 1926 there was one motor vehicle for each 5.07 persons in New Hampshire. Extending the past trend of this ratio to 1936 it is estimated there will then be one vehicle for each 2.5 persons. As the yearly increase in motor vehicle traffic on the State highways has been found to be practically in direct proportion to the growth of motor vehicle registration, it may be expected that traffic on the State highways will increase 52.1 per cent between 1926 and 1931 and 37.5 per cent between 1931 and 1936, or 109.1 per cent for the ten-year period.

As a basis for the plan of improvement, the trunk-line highways have been classified in three groups designated as major, medium and minor routes according to their average daily present and estimated future traffic. Major routes include those sections carrying 1,500 or more motor vehicles daily; medium routes, sections carrying from 500 to 1,500 daily; and minor routes, sections carrying less than 500 daily. This classification has been made on the basis of observed 1926 traffic, and the estimated traffic in 1931 and 1936 is employed to indicate the probable classification in those years.

Experience in New Hampshire indicates that when traffic exceeds approximately 500 vehicles per day, under average physical conditions, ordinary untreated gravel and similar surfaces can not be economically maintained so as to provide satisfactory service for traffic. Above that density the type and design is largely a function of the volume and characteristics of traffic, partic-

ularly the frequency of heavy wheel loads, the choice of types including bituminous treated types for the lower traffic densities and the several pavement types for the sections with denser traffic.

If, on the basis of this experience, those sections of the trunk-line system which carried in excess of 500 daily vehicles in 1926 be considered as requiring a type of surface superior to ordinary gravel, approximately 1,000 miles, or 68.8 per cent of the trunk-line system require such surfaces.

The principal highway problems confronting the State are, first, the provision of adequate highway revenues to insure the proper improvement of the State highway system; second, the establishment of complete control by the State over the development of the trunk-line system, involving the financing of its improvement solely from State funds; third, the replacement of surface-treated gravel sections on heavy traffic routes with higher types and the completion of unimproved gaps in this system; fourth, the reconstruction of present inadequate, worn-out surfaces on the trunk-line system; and, fifth, establishment of State control over the principal traffic routes of the secondary system, the so-called principal State-aid roads and probable connections, to insure development in accordance with traffic requirements.

INFLUENCE OF GEOGRAPHIC FEATURES UPON HIGHWAYS AND TRAFFIC

THE location of highways in New Hampshire has been influenced to a great extent by mountains and lakes. This is particularly true of the northern and western parts of the State, where the location of the trunk-line highways was largely determined by the natural routes of travel through the mountainous sections. The influence of topography upon the location of the trunk-line highway system is shown in Figure 1.

The White Mountains, covering an area of approximately 1,270 square miles and containing 86 mountain peaks, forests, intervales, lakes, and mountain streams, not only determine the location of highways, but also have a tremendous influence upon the movement and volume of traffic. Highway traffic has been increased to a marked degree by the development of the seashore resorts and the recreational areas surrounding Lakes Winnepesaukee, Sunapee, Squam, Webster, New Found, and Canobie.

The southeastern part of the State is the principal center of manufacturing. Manchester, the largest city in the State, is the center of industrial activity. Nashua, Concord, Portsmouth, Dover, and Rochester are other centers of population and industry in southeastern New Hampshire. The concentration of industrial centers in this section in close proximity to the important manufacturing cities of northeastern Massachusetts has caused it to become the principal traffic area of New Hampshire.

Dixville Notch. Topographic features have had considerable influence on the location of highways

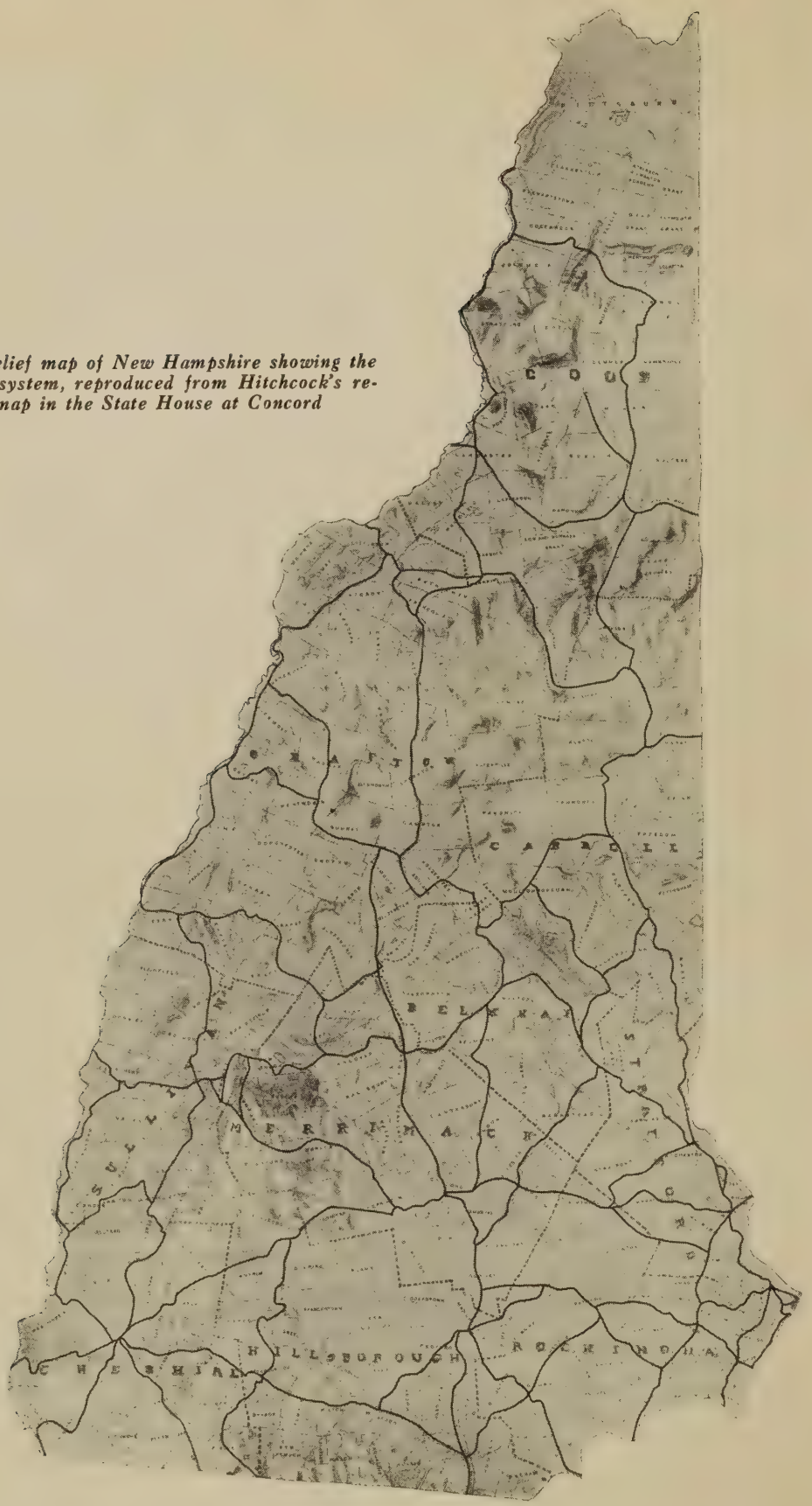
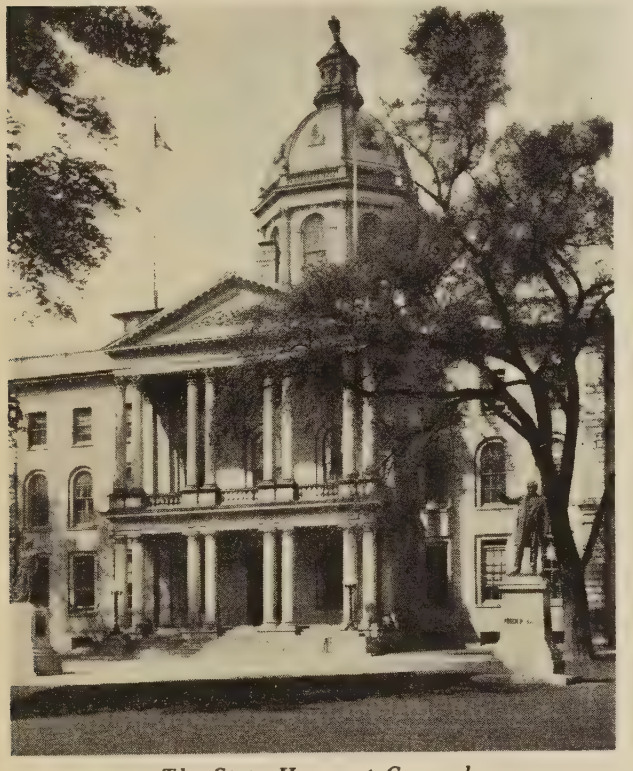


Fig. 1.—Relief map of New Hampshire showing the trunk-line system, reproduced from Hitchcock's relief map in the State House at Concord

DEVELOPMENT OF STATE CONTROL OVER HIGHWAY IMPROVEMENT

ORGANIZED efforts to improve the highways of New Hampshire began in 1796, when the first turnpike company was incorporated by the State legislature. Between 1796 and 1893, 82 turnpike companies were incorporated in the State and 51 turnpikes constructed. Figure 2 shows the roads that had been thus improved by private initiative in 1853.



The State House at Concord

Tolls collected were applied to the maintenance of the turnpikes, but the scarcity of traffic and the limited tolls collected made it impossible for the early proprietors to properly maintain their roadways. This finally resulted in the revocation of the turnpike companies' charters. The present State highways in many instances follow the location of the old turnpikes.

In 1903 the State legislature created the office of State highway engineer. Prior to 1905 there was no centralized control over highway development and improvements were made under the supervision of town and county officials, with the resulting lack of improvement of a connected system of roads of Statewide importance. In 1905 the construction and maintenance of highways in whole or in part with State funds was authorized.

During the first four years of State-aid construction—from 1905 to 1908—local influence in many cases caused the expenditure of State funds for roads of local rather than State importance. This was partially remedied by the law of 1909 designating a system of trunk-line highways. Cities and towns located on trunk-line routes were required to spend their State-aid appropriations in completing the improvement of these routes before they could receive State aid for the improvement of local, city or town roads. A bond issue of $1,000,000 was authorized to complete construction of the designated trunk-line highways, of which $750,000 was issued between 1910 and 1912.

During the ten-year period from 1905 to 1915 development of State highways consisted primarily of the establishment of the trunk-line system, extension of the system by the legislature, improvement of trunk-line roads chiefly with gravel surfaces, and the improvement of unconnected sections of State-aid highways. Bridge construction prior to 1915 was not an important part of the program of highway improvement.

In 1915 the office of State highway engineer was abolished and the State highway department was placed in charge of a highway commissioner. The commissioner was made responsible for highway policies with respect to the location, construction, and maintenance of all roads constructed in part or wholly with State funds.

Trunk-Line Highway System and State-Aid Roads

The three original trunk-line routes shown in Figure 3 were the Merrimack Valley Road, now U. S. 3; the east side road, now State Routes 1-A and 16; and the west side road, now State Route

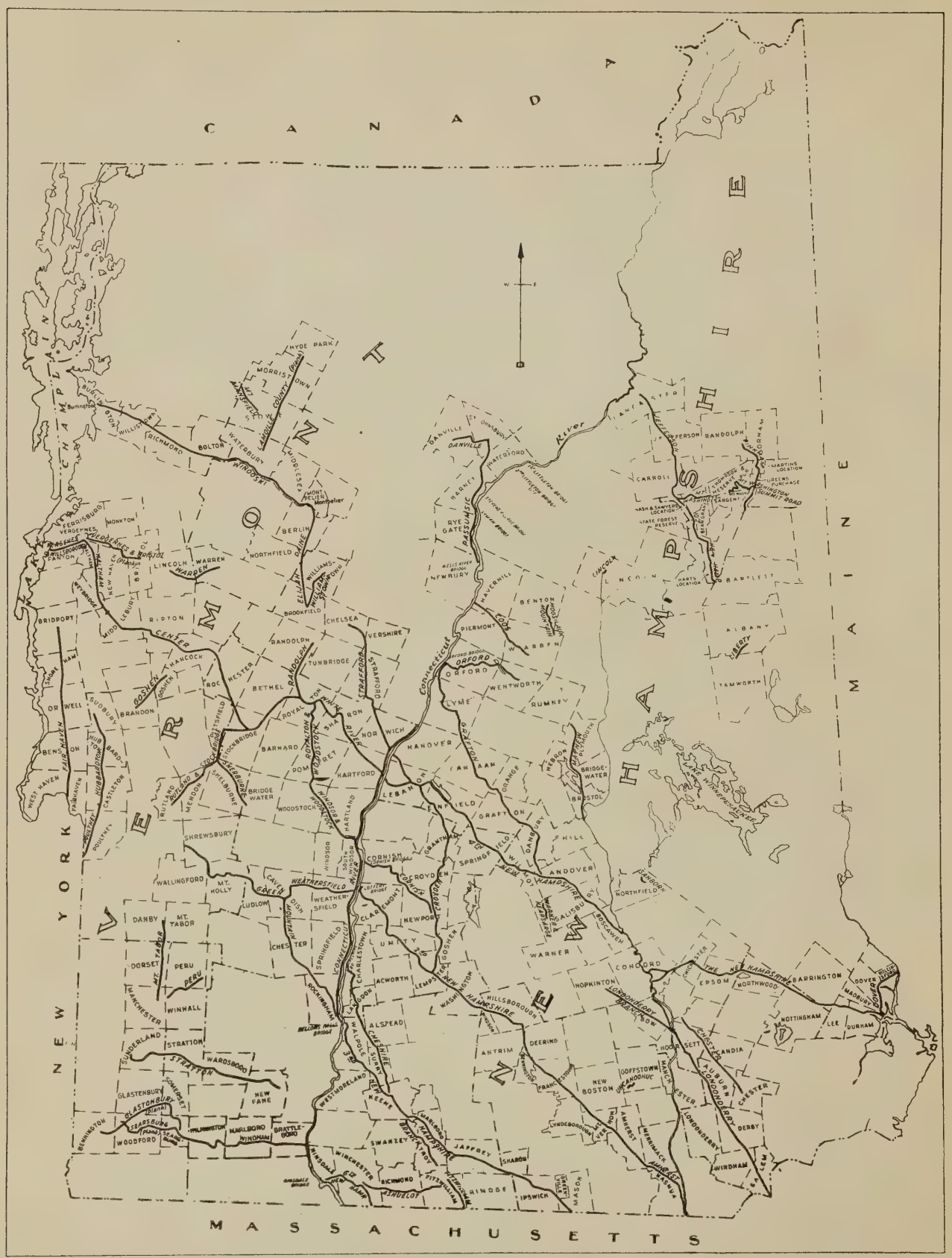


FIG. 2.—*The turnpikes of New Hampshire and Vermont in* 1853

10. The total mileage included in these three routes in 1910 was 476 miles. Trunk-line mileage had been increased to 989.5 miles in 1916, 1,307.6 miles in 1921, and 1,435.3 miles by 1926, as shown by Figure 4. Approximately 11 per cent of the total rural road mileage in the State is now included in the trunk-line system.

The condition of improvement of the trunk-line and State-aid roads in 1926 is shown in Figure 5. The trunk-line system consists of the main through routes connecting important centers of population and industry and connecting with the principal highways of Maine, Massachusetts, and Vermont. State-aid roads serve the rural districts, are local in character, and consist mainly of many short unconnected sections of improved highways.

Prior to 1916 improvement of the trunk-line roads was largely with plain gravel surfaces, of which 499.3 miles had been constructed while 128.2 miles had been surfaced with waterbound macadam, 25.1 miles with bituminous macadam and 1.9 miles with modified asphalt. Figure 6 shows the state of improvement of the trunk-line highways in 1916, 1921, and 1926.

Plain gravel was in the main found to be satisfactory during the early period of development prior to 1916, but increases in traffic finally made it impossible to provide satisfactory service on principal routes without the application of surface treatment. Between 1916 and 1921 a considerable mileage of plain gravel surfaces on the trunk-line system was treated with tar and asphaltic oil. In 1921 there were 571.2 miles of this type on the trunk-line system.

Surface-treated gravel has continued to be the principal type of surface on trunk-line roads. In 1926, of the 1,435.3 miles of trunk-line highway, 801.0 miles were of the surface-treated gravel type, 134.3 miles of bituminous macadam, 67.4 miles of modified asphalt, and 16.1 miles of concrete.

Surface treating a gravel road near Center Harbor

The State-aid system, at the present time, consists chiefly of scattered and unconnected sections of improved road. The legislature has not designated a connected system and development depends essentially upon the selection by the towns of important highways for improvement and upon the ability of the towns to raise funds to take advantage of State aid. Inability to raise sufficient revenue and the lack of agreement between town officials in the selection of highways for improvement have hampered the development of a connected system of improved State-aid roads.

There were, on July 1, 1926, 764.6 miles of improved State-aid roads, as shown in Table 1.

Constructing a foundation for a road with hand-placed stone from an old fence

Fig. 3.—Extent of trunk-line highway system in December, 1910

Control by State Highway Department Over Trunk-Line and State-Aid Roads

The commissioner of highways has general supervision, control and direction, on behalf of the State, over all matters pertaining to the location, construction, maintenance and abandonment of highways built or maintained either wholly or in part with money appropriated from the State treasury. He has the power to fix the location of any route authorized to be so built, the method of construction to be employed, the kind and quality of materials to be used, the manner in which such highway shall be maintained, and all other matters pertinent thereto.

Highways built or maintained wholly or in part with money appropriated from the State treasury are divided into two principal classes:

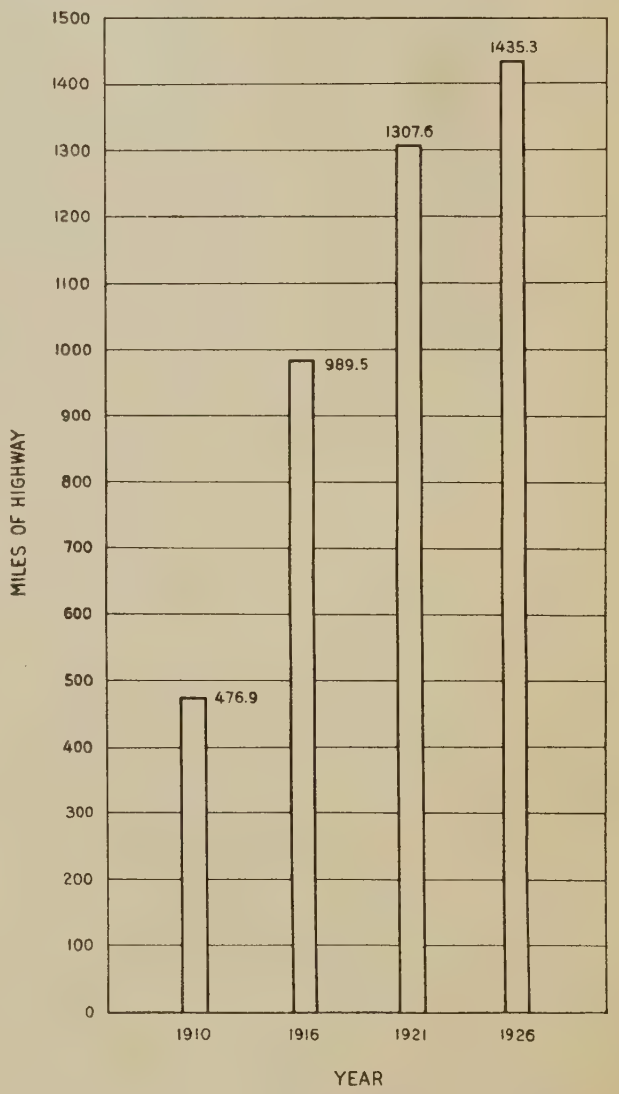


Fig. 4.—Mileage of trunk-line highways at intervals from 1910 to 1926

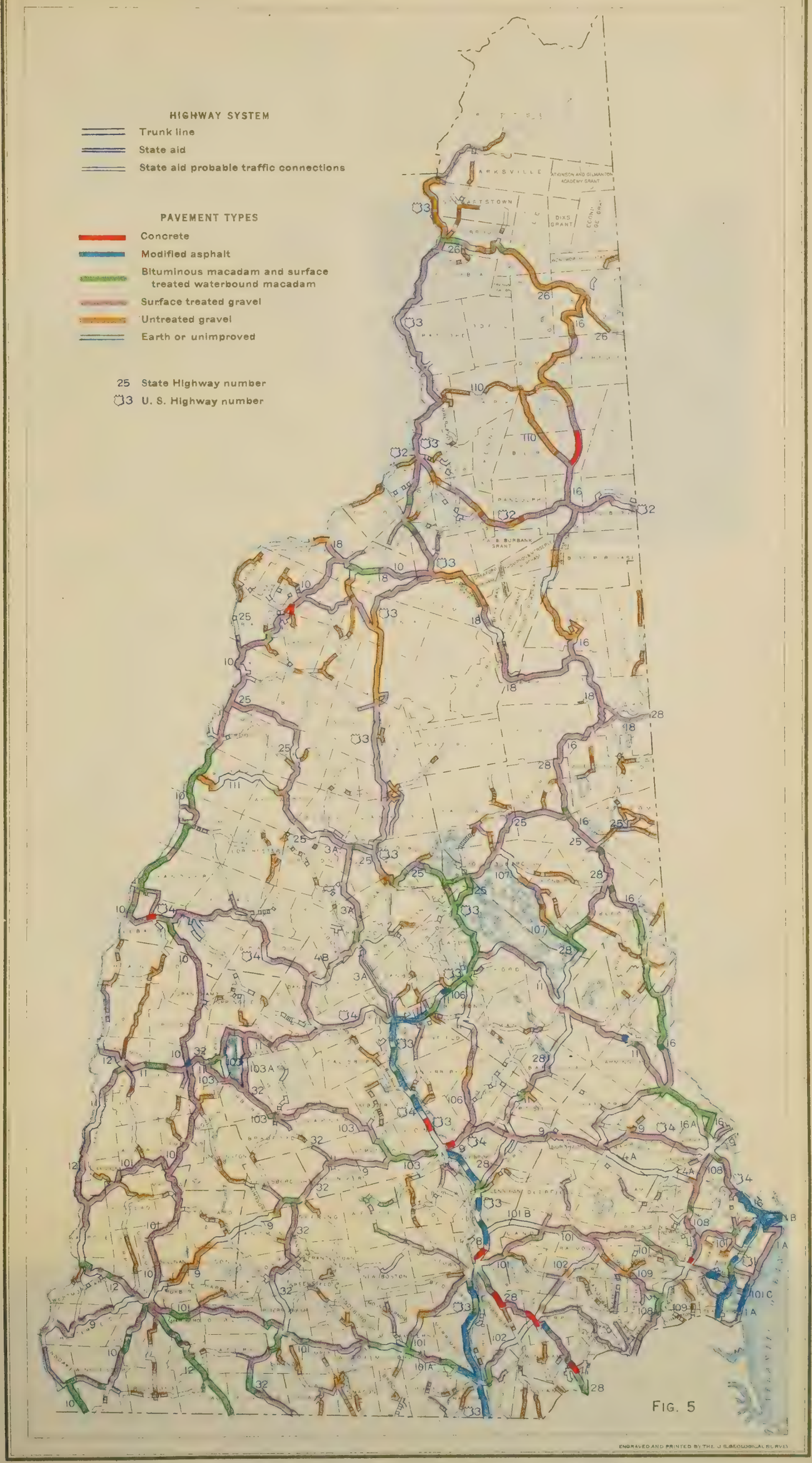


FIG. 5

FEDERAL-AID, TRUNK-LINE, AND STATE-AID HIGHWAYS,
SHOWING TYPES OF IMPROVEMENT
1926

1. Trunk lines, which are highways designated as such, or as cross-state roads to be permanently improved, by the legislature or by the highway commissioner under authority conferred by the legislature.

Table 1.—Type of improvement of State-aid roads, July 1, 1926

Type	Miles
Plain gravel	421.5
Surface-treated gravel	313.0
Surface-treated waterbound macadam	16.6
Other waterbound macadam	7.2
Bituminous macadam	5.8
Modified asphalt	.4
Cement concrete	.1
Total	764.6

2. State-aid roads not designated as trunk lines.

State roads are constructed and maintained wholly by the State.

Trunk-line highways are constructed by the State and town, city or place in which they are located by contract or by force account. The city, town or place receives from the State one-half the cost of the improvement, and in towns unable to pay that proportion, such further sums, as in the opinion of the commissioner is equitable. In

A gravel surface treated with tar on U. S. 2 near Shelburne

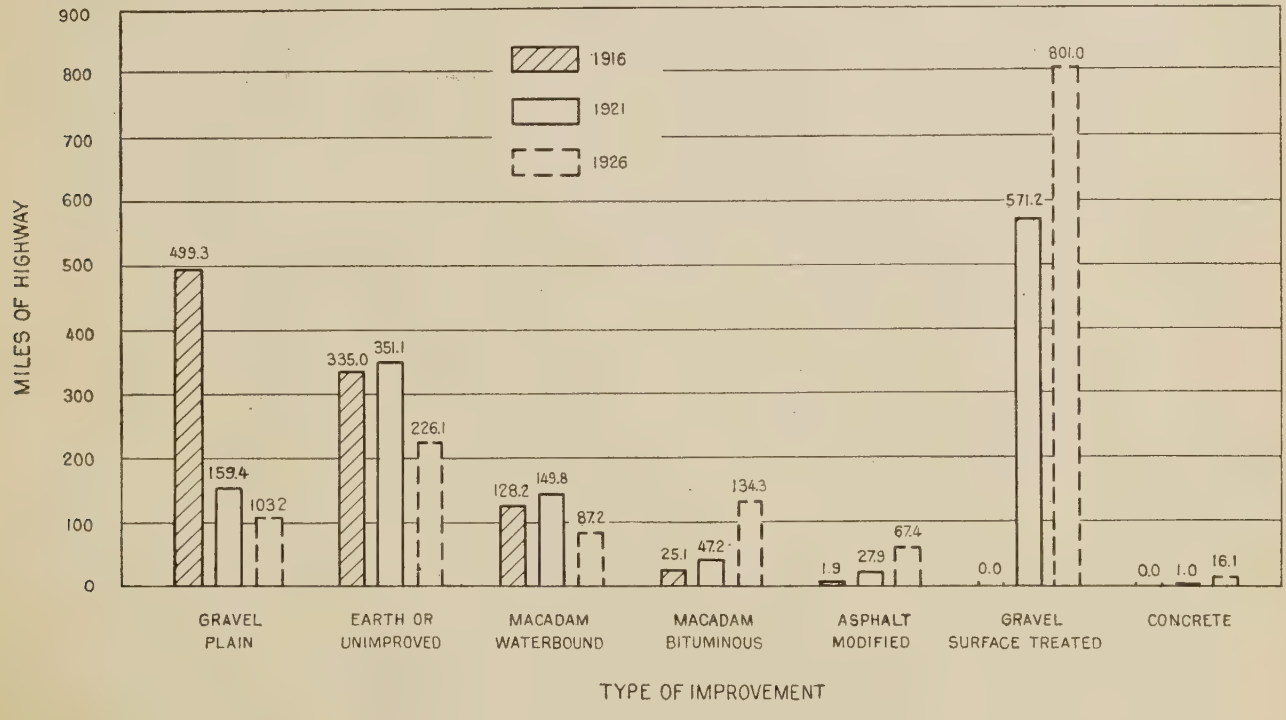


Fig. 6.—Condition of improvement of the trunk-line system in 1916, 1921 *and* 1926

case a city or town neglects to raise their share of funds necessary for highway improvements as requested by the commissioner such improvements can be made at the expense of the State and one-half of the cost or less if deemed

An old covered bridge. Many of the older bridges are no longer adequate and will have to be replaced

equitable by the commissioner is added to the State tax of the city or town. Such tax, however, is limited to one-fourth of one per cent of the ratable estate on which other taxes are assessed. Trunk lines in any city or town must be improved before State aid can be granted for State-aid roads not designated as trunk lines.

Trunk-line highways are maintained by the State and the city or town in which they are located, to the satisfaction of the commissioner of highways. In case the town or city fails to raise their share of maintenance funds, maintenance is performed by the State and the cost added to the State tax of the city or town.

State-aid highways other than trunk lines are constructed in accordance with specifications provided by the commissioner of highways.

Each town must set up a fund for permanent improvement based upon the valuation of the town and if State-aid funds are requested, the town must raise an additional sum equal to 50 per cent of the permanent improvement fund. This fund, together with aid furnished by the State, becomes a joint fund for improvement of such highways as the commissioner of highways and local highway officials may designate. Such roads must also be maintained by the town or city in which they are located.

Net revenues from motor vehicle fees and gasoline taxation in excess of the funds used for construction of State and State-aid highways and trunk lines are used to assist the local units in the maintenance of these roads.

The highway commissioner therefore has complete legal control over the construction and maintenance of the trunk-line system within the limits of funds provided for the State highway department by the legislature. The limitation of these funds and also the lack of adequate funds available to meet State aid in many towns frequently forms a very definite barrier to the proper development of the trunk-line system.

The balanced development of a system of State-aid roads other than trunk line is limited in the same manner and is further complicated by the provision that the location of such improvements must have the approval of the local highway administrators as well as of the highway commissioner.

HIGHWAY REVENUES AND EXPENDITURES

MOTOR vehicle registration and license fees form the principal source of highway revenue as shown in Table 2. Approximately 60 per cent of the revenues of the State highway department was derived from these fees during the five-year period from 1921 to 1925. A decrease in this revenue in 1924 as compared with 1923 was due to a change in the basis of determining the amount of license fee per vehicle. A reduction in the new rates was made effective in 1926.

A gasoline tax of one cent per gallon was imposed in 1923, increased to two cents in 1924 and further increased to three cents per gallon on May 1, 1927. This tax has furnished a substantial part of revenues for highway development. In 1925 the tax was responsible for 25 per cent of the total highway revenues.

Funds received from the Federal Government for the construction of Federal-aid roads amounted to 16.2 per cent of the total revenues for the five-year period. These funds are only available for expenditure in connection with funds under the full control of the State highway department and on the Federal-aid system of the State, which includes 989 miles.

Special appropriations in 1921 included $125,000 for State-aid construction, $30,000 for bridges, and $200,000 for reconstruction of roads which had been neglected during and immediately after the war. In 1922 this fund included $125,000 for State-aid construction and $30,000 for bridges. In 1923 and 1924 the appropriation was limited to $35,000 for bridges only.

Applying a surface treatment

Expenditures of the State highway department, including Federal-aid funds, for the five-year period from 1921 to 1925, are shown in Table 3. The largest item of expenditure was for trunk-line construction, involving mostly gravel surfaces, for which 35.7 per cent of the total funds were expended. Trunk-line maintenance and reconstruction expenditures, amounting to 32.4 per cent of the total, was the second largest item.

Table 2.—Revenues of the State highway department, February 1, 1921 to February 1, 1926

Source of revenue	1921	1922	1923	1924	1925	Total
Motor vehicle fees [1]	$802,348	$1,111,125	$1,520,475	$1,427,176	$1,622,787	$6,483,911
Federal reimbursements on Federal-aid roads	267,649	306,462	327,678	490,529	381,365	[2] 1,773,683
Gasoline tax [1]	.....	.....	181,028	586,895	729,904	1,497,827
Special appropriations	355,000	155,000	35,000	35,000	.....	580,000
Income to accounts [3]	85,740	80,010	84,643	154,729	155,044	560,166
Total	$1,510,737	$1,652,597	$2,148,824	$2,694,329	$2,889,100	$10,895,587

[1] Net amount applicable to road work.

[2] Includes $4,291 Federal funds for forest roads.

[3] Consists mainly of income from the rental of trucks and equipment in the garage account.

The construction and maintenance of trunk-line roads accounted for 68.1 per cent of total State expenditures.

State-aid road construction was 3.1 per cent and State-aid road maintenance and reconstruction was 10.5 per cent of total expenditures.

Maintenance charges on gravel roads due to increased traffic and the necessity of reconstructing wornout surfaces on heavy traffic routes were responsible for 42.9 per cent of the total State highway expenditures during the five-year period. In 1925 maintenance and reconstruction charges amounted to 45.3 per cent of the total expenditures of the State highway department. Approximately 67 per cent of these maintenance and reconstruction costs were for maintenance alone. The greater part of the maintenance costs can be attributed to gravel surfaces which become increasingly expensive to maintain as traffic increases. It can be reasonably concluded that, unless durable surfaces are substituted for gravel and similar surfaces on heavy-traffic highways during the next few years, maintenance charges will become even more excessive and a still greater amount of money needed for permanent improvement will be diverted for maintenance.

Maintenance men preparing to load material from a stock pile

The gasoline tax was instituted in 1923 to raise additional revenue for necessary highway improvements, but decreases in registration and license fees have offset this revenue to a large extent. The average fee [1] per vehicle for registration and license has decreased from $24.56 in 1923 to $18.15 in 1926, a decrease of $6.41 per vehicle. Average gasoline tax revenue per vehicle was $2.71 in 1923 and $8.64 in 1926, an increase of $5.93 per vehicle as compared with a decrease

[1] Based upon the amount applicable to road work.

Table 3.—Expenditures of the State highway department February 1, 1921 to February 1, 1926

Expenditure	1921	1922	1923	1924	1925	Total	
							Per cent
General engineering and administration	$82,327	$86,896	$85,465	$108,343	$133,814	$496,845	4.8
Trunk-line construction [1]	370,865	321,265	1,078,204	1,111,947	819,010	3,701,291	35.7
State-aid construction	83,155	63,356	54,478	58,568	62,159	321,716	3.1
Trunk-line maintenance and reconstruction	546,608	690,377	514,719	710,755	897,066	3,359,525	32.4
State-aid maintenance and reconstruction	140,991	172,526	162,252	298,850	311,145	1,085,764	10.5
State roads, construction and maintenance	77,834	75,203	83,075	102,269	135,213	473,594	4.6
State-aid bridge construction	25,717	27,613	30,408	27,742	35,936	147,416	1.4
Garage and equipment	79,013	140,245	126,743	126,668	123,237	595,906	5.8
Miscellaneous [2]	.....	4,545	7,321	14,703	149,043	175,612	1.7
Total	$1,406,510	$1,582,026	$2,142,665	$2,559,845	$2,666,623	$10,357,669	100.0

[1] Includes Federal reimbursements on Federal-aid roads.

[2] Includes legislative specials, forest-road construction, and expenditures for memorial bridge, Geological Survey, and buildings.

of $6.41 per registration and license fee. Table 4 shows motor vehicle registration and revenues for the ten-year period from 1917 to 1926, inclusive.

A decrease in the average revenue per vehicle is noted in 1926 as compared with 1925. Although motor vehicle registration had increased 9.2 per cent between 1925 and 1926, the increase in motor vehicle revenues was only 2.7 per cent.

New Hampshire has reached a stage in highway development where economy demands the replacement of gravel surfaces with more durable types on a considerable mileage of heavy-traffic roads. Motor vehicle registrations and the resulting traffic have increased greatly and foreign traffic has increased at a slightly more rapid rate than local traffic. During the period 1921 to 1926, inclusive, motor vehicle fees and gasoline taxation have produced almost three-fourths of the revenue of the State highway department. Road improvements have not kept pace with traffic requirements and it seems evident that the total revenue is not commensurate with the need for highway improvement.

Table 4.—Motor vehicle registration and revenues, 1917 to 1926

Year	Motor vehicles	Motor vehicle revenues applicable to road work	
		Total	Average per vehicle
1917	22,267	$376,774	$16.92
1918	24,817	455,372	18.35
1919	31,625	538,621	17.03
1920	34,680	580,342	16.73
1921	42,039	790,129	18.80
1922	48,406	1,145,602	23.67
1923	59,604	[1] 1,625,920	[1] 27.28
1924	71,149	[1] 1,999,639	[1] 28.10
1925	81,498	[1] 2,320,376	[1] 28.47
1926	89,001	[1] 2,383,932	[1] 26.79

[1] Includes gasoline tax.

ORGANIZATION OF THE STATE HIGHWAY DEPARTMENT

THE New Hampshire State highway department was created by the State legislature in 1905 for the purpose of locating, constructing and maintaining State highways.

Figure 7 shows the present organization of the department. The commissioner appoints his assistants, consisting of construction, bridge, materials, office and public relations engineers, who report directly to him.

The State is divided into ten districts, each under a division engineer. Each division engineer has complete charge of the construction and maintenance of all highways upon which State funds are expended in his particular district. These division engineers also report directly to the commissioner.

The inspectors, maintenance superintendents, and patrolmen come under the direct supervision of the division engineers.

Standard signs erected on New Hampshire highways

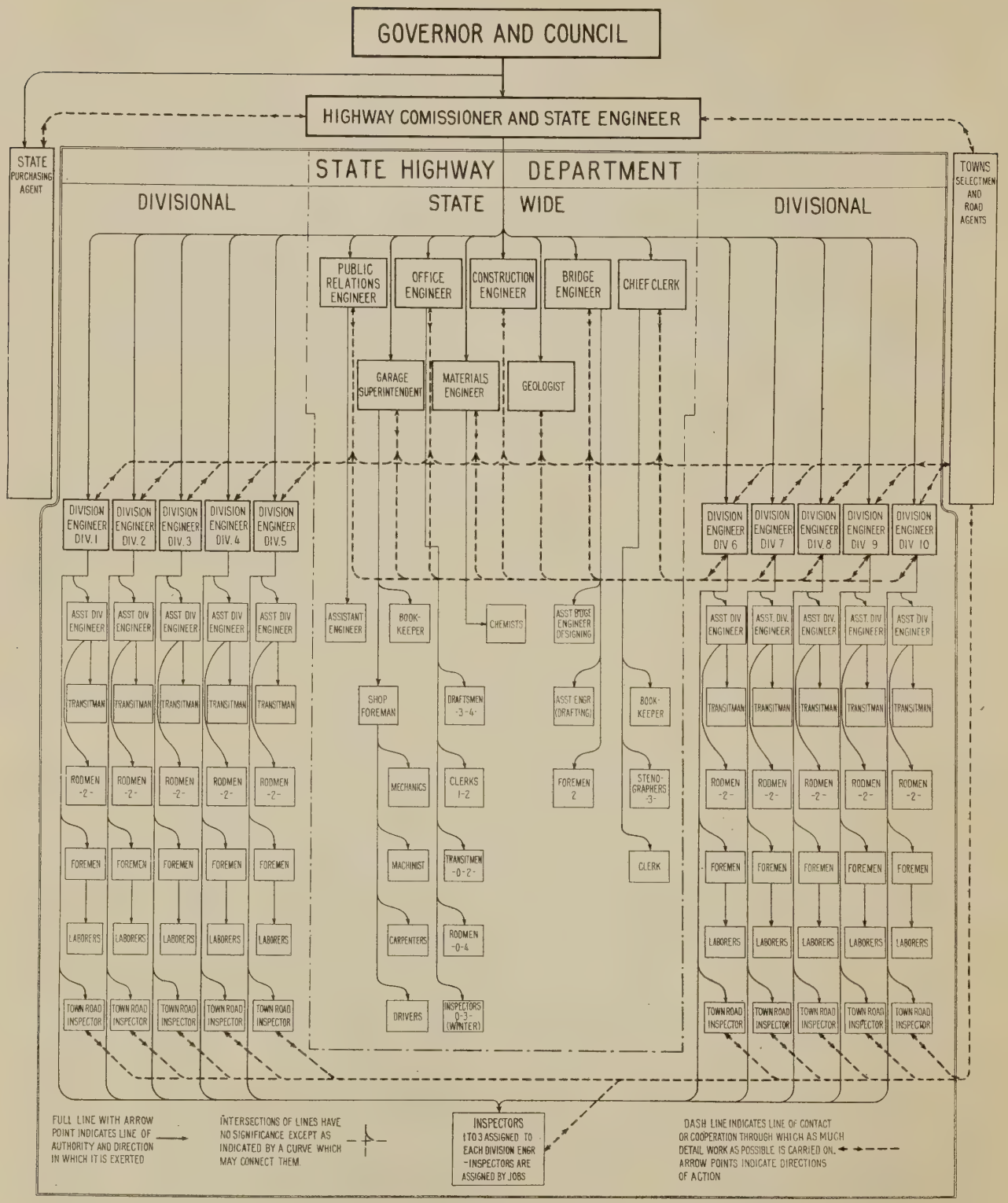


Fig. 7.—Organization chart of the New Hampshire State Highway Department

THE TRANSPORTATION SURVEY

THE importance of highway transportation resulting from the rapid increase in motor vehicle use during the past two decades has made the development of highway systems in all States an industry of the first rank. Motor vehicle registration in New Hampshire has increased from 8,200 in 1913 to 89,000 in 1926, or one motor vehicle for each five persons in the State. The demand for highway service has increased proportionately.

One of the traffic survey stations on U. S. 3, the Daniel Webster Highway. This was both a recording and weighing station

The true measure of highway progress is the provision of the maximum highway transportation service with available revenues, labor, equipment and materials. Such progress cannot be measured in terms of miles of highway construction or of sums of money expended. Highway development is closely related to the general development of the State, its industrial, agricultural and social progress, and the well-being of its people.

State highway officials as executives of this industry are responsible for the efficient direction of the State's highway development. Successful management of this public industry is fundamentally similar to the management of private business and requires, (1) sound analysis of the demand for highway service, (2) efficient production methods, and (3) proper financing.

The purpose of a highway transportation survey is to provide for the highway executive a reliable analysis of the present and future demand for highway service. This demand can be measured only by an accurate and comprehensive study of the volume and type of present traffic upon which to base an estimate of expected future traffic on highway systems and routes.

The efficient utilization of available funds, materials and labor supply in the development of a highway system to meet traffic demands requires the establishment of an improvement plan for a period of several years. The provision of necessary funds is the responsibility of the State legislature. However, it is the duty of the State highway commissioner as a director of the highway business of the State to determine the funds necessary for the proper development of the highways of the State.

The New Hampshire traffic survey was under-

taken to provide accurate information regarding traffic on the highways of the State and to establish, on the basis of this knowledge of traffic and its trends, a plan of highway improvement which will satisfactorily and economically meet traffic requirements.

To meet this purpose the following specific information has been provided:

1. The traffic importance of the highway systems of the State. This information provides a basis for determination of the need for their improvement and the distribution of highway funds among the systems.
2. A classification of the routes and sections of routes of the trunk-line system on the basis of the volume and composition of present and expected future traffic, involving (a) average, maximum and future total traffic, and truck traffic, (b) present and future number of small, medium, and large-capacity trucks, (c) present and expected future maximum loading and frequency of heavy gross loads and wheel loads, and (d) present and expected future special traffic movements.
3. The establishment of a plan of highway improvement for a period of several years.

Methods of the Survey

The highway traffic survey cooperatively conducted by the Bureau of Public Roads, U. S. Department of Agriculture, and the New Hampshire Highway Department was begun on July 16, 1926, and continued for a period of three months.

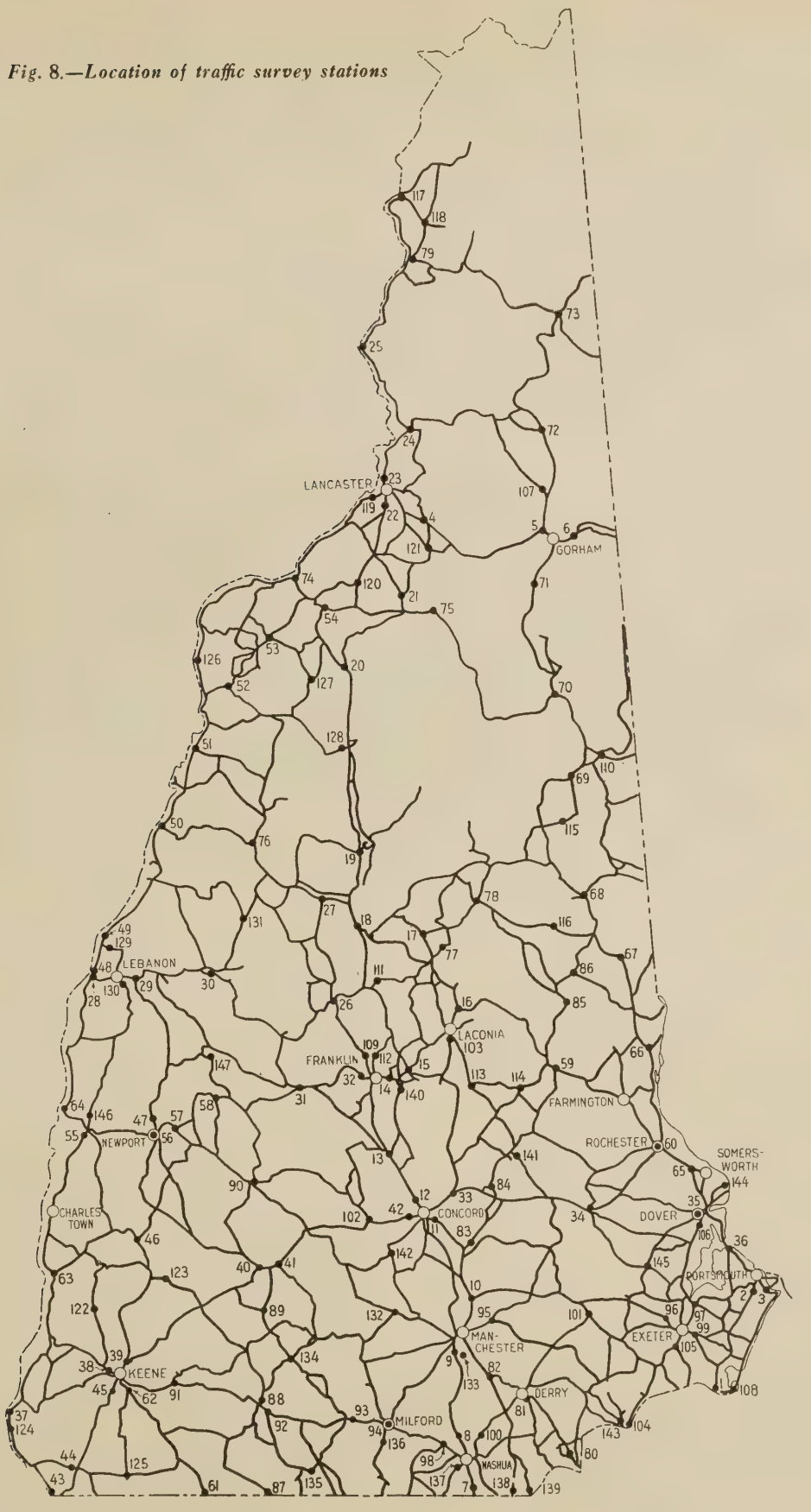
During this period traffic data were recorded at 147 points on the New Hampshire highway system as shown in Figure 8. These survey stations were located at approximately 15-mile intervals on the trunk-line system, in such manner as to enable close observation of variations in traffic on the several routes. On the State-aid and town-road systems traffic was recorded at a sufficient number of points to determine the variations in traffic on these systems. In selecting the observation points, the location of principal industries, population of cities and towns, recreational areas and other economic factors which affect highway traffic were given careful consideration.

Counts of motor trucks, passenger cars, motor busses and horse-drawn vehicles, and detailed motor truck and passenger car data were recorded at all stations. Motor truck data included the capacity of the truck, State of registration, place of ownership, origin, destination, type of origin and destination, commodity carried, and tire equipment. Gross and rear axle weights of motor trucks were measured by means of portable scales.

Passenger car data include State of registration, place of ownership, purpose of trip, origin, destination, and number of passengers.

A carefully planned schedule provided for the operation of each station six times during the period of the survey. Each operation consisted of a 10-hour observation period alternating between 6 a. m. to 4 p. m. and 10 a. m. to 8 p. m. Night traffic (between 8 p. m. and 6 a. m.) was recorded by special observers. Traffic observations for week-periods were made at selected stations to determine variations in traffic by days of the week.

Fig. 8.—Location of traffic survey stations



DENSITY OF HIGHWAY TRAFFIC

AVERAGE daily traffic and maximum daily traffic both for the present and estimates for the future are among the more important factors in determining the proper classification of highways into systems and in determining the proper class of improvement for various highways. Highway traffic now consists almost exclusively of motor vehicles. The volume of horse-drawn traffic was so small as to warrant no consideration. Motor vehicle traffic is segregated into traffic of passenger cars, motor trucks, and motor busses. As is general throughout the country, passenger cars predominate on all routes. Motor trucks constitute a relatively small part of the total traffic, but are of considerable importance, particularly on routes which carry large-capacity trucks.

Motor bus traffic, although relatively small in numbers, is becoming an important factor in planning the principal traffic routes. The volume of motor bus traffic on any route is dependent upon several factors which have little influence upon the volume of passenger cars and motor trucks, and is, therefore, considered in a separate discussion. The following discussion of traffic density on highway systems and routes refers exclusively to traffic of passenger cars and motor trucks.

New Hampshire has approximately 12,912 miles of rural highways. On the basis of the apportionment of revenue for construction purposes, these roads have been classified as State-aid roads, State roads and town roads. State-aid roads include all of the more important highways in the State and are built through the joint contributions of the State and the local units. The State roads are built entirely with State funds and consist of a relatively small mileage of roads located in areas where the local governmental units are unable to contribute toward road construction. All other rural highways are town roads built with local funds.

Truck traffic on New Hampshire highways is composed largely of light and medium-capacity trucks

The more important highways have been officially designated as trunk-line highways and form a continuous highway system of 1,435 miles. The Federal-aid system, with the exception of 19 miles, follows routes of the trunk-line system. For purposes of comparison with other highways the trunk-line system, together with the sections of the Federal-aid system which are not on the trunk-line system, a total of 1,454 miles, is discussed in this report, as the trunk-line system.

There are in the State 765 miles of State-aid roads which are not included in the trunk-line system. This mileage is made up, for the most part, of a large number of short, disconnected,

improved sections, some of which are short feeder roads connecting with trunk-line routes, and others are short isolated sections of a few miles built in or near small villages. To connect the improved State-aid sections into a continuous system, secondary in traffic importance and serving as a feeder system to the trunk-line system, requires the improvement of approximately 1,005 miles. The 765 miles of existing State-aid roads and the 1,005 miles of unimproved roads required to make up a secondary system, a total of 1,770 miles, is discussed in this report as the State-aid system of highways. All remaining rural roads in the State, approximately 9,688 miles, are classed as town roads. The location of the trunk-line system and the system of State-aid routes and probable traffic connections together with the present improvements on these highways is shown in Figure 5.

Distribution of Traffic

The relative importance of the three systems of highways is shown by a comparison of their daily traffic[2] use, as shown in Table 5.

The trunk-line highways, embracing 11.3 per cent of total rural highway mileage, carry 69.4 per cent of the total traffic measured in vehicle-miles. Town highways, 75.0 per cent of the total mileage, carry only 13.8 per cent of the total traffic.

Traffic varies greatly on various sections of each highway system, as well as by systems. Average daily traffic on the trunk-line highways varied from 6,000 vehicles on U. S. 1 south of Seabrook to less than 100 vehicles on some of the minor routes. Average traffic on the improved sections of the State-aid system in the relatively densely populated southeastern part of the State was 369 vehicles per day, in the southwestern part, 356 vehicles per day, and in the sparsely populated northern and central parts of the State, 171 vehicles per day. Traffic on the unimproved sections of the State-aid system, comprising the probable traffic connections between present improvements, averaged 146 vehicles per day in the southeastern and southwestern parts, and 84 vehicles per day in the northern and central parts.

Less than 40 vehicles per day were observed at several points on the State-aid system. Traffic on the town roads was found to be very low, except on a few short sections near large villages, averaging 27 per day on all town roads. Appendix II shows the average daily density of passenger cars and motor trucks, the normal maximum traffic in 1926, and the estimated average traffic in 1931, at each of the stations at which traffic was observed.

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[2] In this report certain terms, frequently used, have invariably the same meaning. These terms and their definitions are as follows:

Vehicles refers only to motor vehicles (passenger cars and trucks) exclusive of horse-drawn conveyances.

Traffic is defined as the movement to and fro of vehicles over a highway.

Density of traffic is defined as the number of motor vehicles passing any given point on a highway in a unit of time. For example on Route U. S. 3 between Nashua and the Massachusetts State line the average daily density of traffic was 4,188 vehicles. This means that during an average 24-hour period 4,188 vehicles passed any given point on this 3.5 miles of highway. Unless a different unit of time is specifically stated density of traffic refers to the number of vehicles passing any given point on a highway during a day of 24 hours.

The accuracy of the determination of density of traffic is influenced by the distance between the survey stations. Exactness of method would require a density record for each point on the highway system where traffic varies. The cost involved in proportion to the relatively small gain in accuracy does not justify location of traffic observation points at close intervals. The density computed for each station on the New Hampshire highway system is applied to the short sections of highway reasonably adjacent to each station on which there is but little variation in traffic. In discussing utilization of the highway system, where it is desired to discriminate between the use of the highway by vehicles and the volume of traffic, the term *vehicle-miles per mile* is used in the former connection. Numerically, *vehicle-miles per mile* are equivalent to density of traffic.

Vehicle-mile is defined as the movement of a motor vehicle one mile.

Average daily vehicle-miles on the highway system are calculated by multiplying the average daily density of traffic on each section of highway by the length of the section in miles and adding the products. For example, the daily vehicle-miles on U. S. Route 3 between Nashua and the Massachusetts State line was 14,658 (4,188 (average daily density) x 3.5 (highway mileage)).

Daily refers to a day of 24 hours.

Average Daily refers to an average day during the period of the survey (July 16 to October 15, 1926).

Ton-mile is defined as the movement of a ton one mile.

Net tonnage refers to the net weight of the motor-truck cargo.

Gross tonnage or gross load refers to the weight of the motor truck cargo and vehicle.

Foreign traffic or vehicles refers to vehicles having other than New Hampshire license tags. Foreign vehicle-miles are calculated by applying the per cent of foreign vehicles at each station to the total vehicle-miles on the sections of highway adjacent to each station and adding to obtain total foreign vehicle-miles. Similar procedure is used in calculation of farm and city, business and non-business and touring traffic, and trucking for hire.

Table 5.—Motor vehicle utilization and mileage of New Hampshire highways by systems

Highway system	Highway mileage		Daily vehicle-mileage		Average daily density of traffic
	Miles	Per cent	Vehicle-miles	Per cent	
Trunk-line	1,454	11.3	1,332,000	69.4	916
State-aid	1,770	13.7	322,000	16.8	182
Town	9,688	75.0	265,000	13.8	27
Total	12,912	100.0	1,919,000	100.0	149

Concrete construction on Route U. S. 3 near Hooksett

Principal Traffic Routes

Figure 9, the basic traffic map of the report, shows average daily motor vehicle and motor truck traffic in 1926 and the estimated average daily motor vehicle traffic in 1931 and 1936 for each route on which traffic was observed. Classification of the trunk-line system as major, medium and minor routes and density of population is also shown. Concentration of traffic is apparent near the large centers of population—Manchester, Nashua, Concord, Berlin, Portsmouth, Dover, Keene, Laconia and Rochester, and near the principal recreational centers and on the principal through routes. The largest volume of traffic is found on the main through routes in the southeastern section of the State, where a large volume of local traffic is added to the proportionally large volume of through traffic. The most important of the through routes are U. S. 1, crossing the southeastern corner of the State from the Massachusetts line to Portsmouth, and connecting the populous area of eastern Massachusetts with the resort and vacation area of southeastern New Hampshire and Maine, and U. S. 3, from the Massachusetts line through Nashua, Manchester and Concord, to the Lake Winnepesaukee area, the White Mountains, and the northern part of the State.

Other important through routes serving north-south traffic are Route 1-A, paralleling U. S. 1 in southeastern New Hampshire; Route 16 on the eastern side of the State from Portsmouth, through Berlin to Errol; and Route 10 on the western side of the State from the Massachusetts line via Keene, Newport, Lebanon, Hanover, Haverhill and Littleton to Twin Mountain.

Through routes serving east-west traffic, which is secondary in importance to north-south traffic, are Route 101 crossing the southern part of the State from Portsmouth through Manchester and Keene to the Vermont line at Bellows Falls; U. S. 4 crossing the central part of the State from Portsmouth through Dover, Concord, Franklin, Danbury, Canaan and Lebanon to the Vermont line; and U. S. 2 crossing the northern part of the State from the Maine line through Gorham and Lancaster to the Vermont line.

Average daily motor vehicle traffic density in 1926 and estimated traffic in 1931 on the sections of these routes are shown in Table 6.

Traffic varies greatly on different sections of these routes. In the vicinity of the larger centers of population the local and through traffic combined makes a large volume. On other sections the local traffic does not greatly augment the through traffic. This variation is evident on U. S. 3,

HIGHWAY TRAFFIC SURVEY

OF THE

STATE OF NEW HAMPSHIRE

MOTOR VEHICLE TRAFFIC ON THE STATE HIGHWAY SYSTEM WITH TRAFFIC CLASSIFICATION AND POPULATION DISTRIBUTION

HIGHWAY SYSTEM

- Federal-aid
- Trunk-line
- State-aid
- State aid probable traffic connections
- 25 State Highway number
- U. S. Highway number

POPULATION PER SQUARE MILE, 1920

- 0 .4
- 25–99
- 100 and over

TRAFFIC CLASSIFICATION

- Major traffic highways
- Medium traffic highways
- Minor traffic highways

TRAFFIC FLOW

A. Average daily total of all vehicles
H. State highway
T. Trucks, total per average day
F. Forecast of 1931 traffic
F. Forecast of 1936 traffic

AVERAGE DAILY MOTOR VEHICLE TRAFFIC
(INCLUDING TRUCKS)

0 1 2 3 4 5 6 7 8000 Motor vehicles per day

(1 inch =4000 vehicles)

All traffic above 500 vehicles platted to scale with road line as center. From 250 to 500 platted as 375, less than 250 platted as 125, both on one side, exclusive of road width.

Trucks above 100 platted to scale. From 30 to 100 platted as 75. Less than 30 not shown.

Forcasts of 1931 and 1936 traffic same scale as total vehicles.

SCALE OF MILES

0 2 4 6 8 16 MILES

TRAFFIC DENSITY AND POPULATION SECTIONS
(SECONDARY SYSTEM)

1. Southeastern
2. Southwestern
3. Southwestern
4. Southeastern
5. Northern

Table 6.—Average Daily Traffic in 1926 and Estimated Traffic in 1931 on the Principal Through Traffic Routes

Route	Highway section	Miles	Average daily motor vehicle traffic 1926	Estimated average daily motor vehicle traffic 1931
U. S. 1	Massachusetts State line to Portsmouth	14.7	5,800	9,050
1 A–101 C	Hampton to Portsmouth	16.3	1,925	3,000
U. S. 2	Vermont State line to Lancaster	1.7	567	840
	Lancaster to Jefferson Highlands	10.1	478	710
	Jefferson Highlands to Gorham	13.0	656	980
	Gorham to Maine State line	9.4	619	920
U. S. 3	Massachusetts State line to Nashua	3.5	4,188	6,540
	Nashua to Manchester	16.4	3,533	5,520
	Manchester to Concord	16.2	3,906	6,100
	Concord to Franklin	14.0	2,784	4,350
	Franklin to Laconia	10.4	2,188	3,420
	Laconia to Meredith	9.8	1,932	3,020
	Meredith to Plymouth	16.9	1,043	1,630
	Plymouth to Profile House	32.1	1,331	1,980
	Profile House to Twin Mountain	12.6	693	1,030
	Twin Mountain to Whitefield	8.7	592	880
	Whitefield to Lancaster to Groveton	17.1	834	1,240
	Groveton to Colebrook	26.2	498	690
	Colebrook to West Stewartstown	9.6	54	75
U. S. 4	Portsmouth to Dover	9.3	1,665	2,600
	Dover to point 6 mi. W	6.0	1,040	1,620
	Point 6 mi. W. of Dover to jct. with 28 E. of Concord	21.1	557	830
	Jct. with 28 E. of Concord to Concord	9.9	1,097	1,710
	Franklin to Franklin W. town line [1]	2.6	1,264	1,970
	Franklin W. town line to Potter Place	9.3	1,135	1,690
	Potter Place to Danbury	7.4	265	400
	Danbury to Canaan	14.0	355	530
	Canaan to jct. E. of Lebanon	12.0	948	1,410
	Jct. E. of Lebanon to Lebanon	1.5	1,354	2,110
	Lebanon to West Lebanon	2.6	1,459	2,280
10	Massachusetts State line to Winchester	10.8	869	1,290
	Winchester to Keene	12.7	1,425	2,120
	Keene to Gilsum N. town line	11.0	829	1,230
	Gilsum N. town line to Newport	22.7	581	860
	Newport to jct. with town road to Northville	1.6	809	1,200
	Jct. with road to Northville to jct. with U. S. 4 E. of Lebanon	20.7	598	890
	West Lebanon to Hanover [2]	4.2	1,111	1,650
	Hanover to jct. with 25	30.1	643	960
	Jct. with 25 to Woodsville	7.8	867	1,290
	Woodsville to Lisbon	10.6	737	1,100
	Lisbon to jct. with S. A. road to Sugar Hill	1.5	930	1,380
	Jct. with S. A. road to Sugar Hill to Littleton	7.7	653	970
	Littleton to Twin Mountain	12.8	1,069	1,590
16	Dover to Rochester	9.8	2,021	3,160
	Rochester to Sanbornville	18.5	910	1,360
	Sanbornville to jct. with town road N. of Conway	42.0	766	1,140
	Jct. of town road N. of Conway to Glen	8.4	1,385	2,060

[1] U. S. 4 laps U. S. 3 from Concord to Franklin.

[2] Route 10 laps U. S. 4 from junction east of Lebanon to West Lebanon.

Route	Highway section	Miles	Average daily motor vehicle traffic 1926	Estimated average daily motor vehicle traffic 1931
16	Glen to Jackson	2.7	895	1,330
	Jackson to Gorham	20.3	515	720
	Gorham to Berlin	5.9	1,457	2,270
	Berlin to Milan	6.6	739	1,030
	Milan to Errol	22.3	379	530
101	Portsmouth to jct. with 108 at Stratham	8.7	747	1,110
	Jct. with 108 at Stratham to Exeter	3.2	1,067	1,590
	Exeter to Manchester E. town line	27.1	1,213	1,890
	Manchester E. town line to Manchester	2.5	1,741	2,720
	Manchester to Milford	13.6	799	1,190
	Milford to Wilton Center	5.0	1,334	1,990
	Wilton Center to jct. with town road to Ipswich	10.4	676	1,010
	Jct. with town road to Ipswich to Peterboro	1.5	757	1,130
	Peterboro to jct. with S. A. road to Chesham	11.7	816	1,220
	Jct. with S. A. road to Chesham to Keene	7.3	1,070	1,590
	Jct. with 10 to jct. with S. A. road to Alstead[3]	10.4	135	190
	Jct. with S. A. road to Alstead to jct. with 12	5.0	413	570

[3] Route 101 laps Route 10 from Keene to the junction of Routes 10 and 101 at the town of Marlow.

where average traffic south of Laconia is over 2,000 vehicles per day, but from this point northward it decreases until beyond Profile House it does not exceed 1,000 per day. Similar conditions are noted on U. S. 4 in the vicinity of Portsmouth, Concord, Franklin, and Lebanon; on Route 10 in the vicinity of Keene, Lebanon, and Littleton; on Route 16 in the vicinity of Dover, Conway, Gorham and Berlin; and on Route 101 in the vicinity of Manchester and Keene.

In several instances these routes lap each other or other routes for short distances resulting in heavier traffic than on adjoining sections.

Other routes in the State also carry comparatively large volumes of traffic, particularly those in the relatively densely populated area of southeastern New Hampshire, but three-fourths of the trunk-line mileage carrying over 1,500 vehicles per day is located on the above mentioned routes. The distribution of trunk-line mileage by traffic density classes is shown in Figure 10. Only 11.4 per cent of this mileage carried over 1,500 vehicles per day and more than one-fourth carried less than 500 vehicles per day.

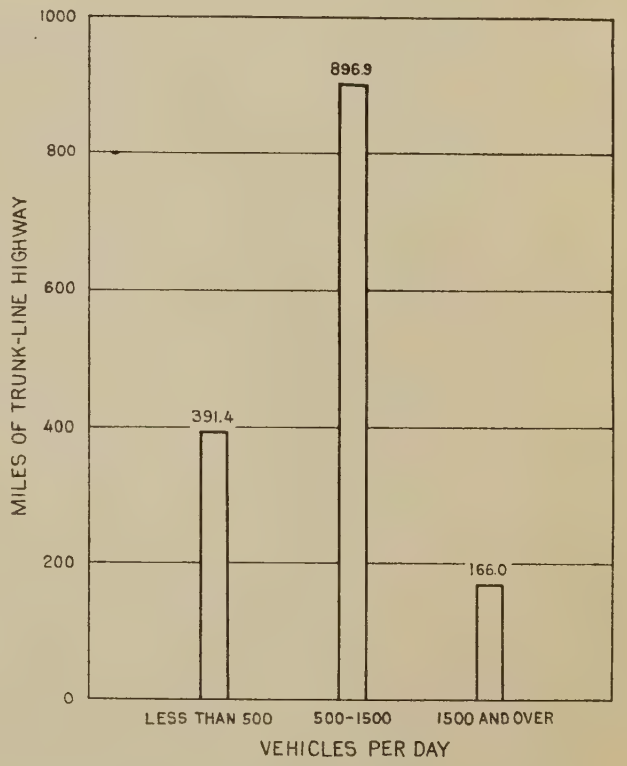

Fig. 10.—Mileage of trunk-line highways by traffic classes

State Divided Into Five Traffic Sections

The State has been divided into five traffic sections according to distinguishing traffic characteristics. These sections are shown in Figure 9. Traffic section 1 includes the principal industrial and densely populated area of the State occupying southeastern New Hampshire and an area in the central part of the State including the territory adjacent to Concord, Franklin and Laconia extending northward to Lake Winnepesaukee. This section includes parts of Rockingham, Strafford, Hillsborough, Merrimack, and Belknap Counties.[3]

Traffic section 2 forms the secondary industrial and population area of the State, including the western part of Cheshire and Sullivan Counties and an area in the central part of Cheshire County extending eastward to include Peterboro in Hillsborough County.

Traffic section 3 comprises the area located between traffic sections 1 and 2, including parts of Hillsborough, Merrimack, Cheshire, and Sullivan Counties.

Traffic section 4 comprises the largely undeveloped area located directly south of Lake Winnepesaukee and bounded on the east, south and west by traffic section 1, including parts of Belknap, Merrimack and Strafford Counties and a small section of Rockingham County.

Traffic section 5 comprises the northern part of the State, including Carroll, Coos and Grafton Counties.

The principal heavy-traffic routes are in the more densely populated areas, although exceptions are noted on the through routes through sparsely populated areas, particularly in the northern part of the State.

The area, population, and density of population per square mile in each of the traffic sections is shown in Table 7.

Table 8 is a summary of the mileage of trunk-line highways by traffic classes in the five sections of the State.

All routes carrying over 1,500 vehicles per day in 1926 are located in traffic section 1, with one minor exception. In this section, 163.4 miles or 44.1 per cent of the total trunk-line mileage carries an average of over 1,500 vehicles per day. The routes included in this traffic class are U. S. 1, U. S. 3 from the Massachusetts line to Meredith; U. S. 4 from Portsmouth to Dover; Route 4-A from Durham to Dover; Route 9 from Concord to the west city line of Concord; Route 16 from Dover to Rochester; Route 28 from Manchester to the Massachusetts line; Route 1-A from Hampton to Portsmouth; Route 101 from Manchester to the east Manchester city line and Route 101-A from Nashau to Milford—the routes adjacent to and connecting the larger centers of population in the area.

Traffic section 3 has 2.6 miles carrying over 1,500 vehicles per day. This section extends from the Concord city line to Hopkinton.

Sections carrying between 1,000 and 1,500 vehicles per day form approximately one-fifth of the trunk-line mileage in traffic sections 1, 2 and 5, and less than one-tenth of the trunk-line mileage in traffic sections 3 and 4. In traffic section 1, routes of this classification are made up of continuations of the routes carrying over 1,500 ve-

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[3] The various sections include the following towns and cities:

Traffic Section 1.—Allenstown, Amherst, Atkinson, Auburn, Bedford, Belmont, Boscawen, Brentwood, Brookline, Candia, Center Harbor, Chester, Concord city, Danville, Dover city, Derry, Durham, East Kingston, Epping, Exeter, Farmington, Franklin city, Fremont, Goffstown, Greenland, Hampstead, Hampton, Hampton Falls, Hollis, Hooksett, Hudson, Kensington, Kingston, Laconia city, Litchfield, Londonderry, Madbury, Manchester city, Meredith, Merrimack, Milford, Milton, Nashua city, New Castle, Newfields, New Hampton, Newington, Newmarket, Newton, Northfield, North Hampton, Pelham, Pembroke, Plaistow, Portsmouth city, Raymond, Rochester city, Rollinsford, Rye, Salem, Sanbornton, Sandown, Seabrook, Somersworth city, South Hampton, Stratham, Tilton, Windham.

Traffic Section 2.—Charlestown, Chesterfield, Claremont, Dublin, Hinsdale, Jaffrey, Keene city, Langdon, Marlboro, Newport, Peterboro, Swanzey, Troy, Walpole, Westmoreland, Winchester.

Traffic Section 3.—Acworth, Alstead, Andover, Antrim, Bow, Bennington, Bradford, Cornish, Croydon, Danbury, Deering, Dunbarton, Fitzwilliam, Francestown, Gilsum, Goshen, Grantham, Greenfield, Greenville, Hancock, Harrisville, Henniker, Hill, Hillsboro, Hopkinton, Lempster, Lyndeboro, Marlow, Mason, Mont Vernon, Nelson, New Boston, Newbury, New Ipswich, New London, Plainfield, Richmond, Rindge, Roxbury, Salisbury, Sharon, Springfield, Stoddard, Sullivan, Sunapee, Surry, Sutton, Temple, Unity, Warner, Washington, Weare, Webster, Wilmot, Wilton, Windsor.

Traffic Section 4.—Alton, Barnstead, Barrington, Canterbury, Chichester, Deerfield, Epsom, Gilford, Gilmanton, Lee, Loudon, Middleton, New Durham, Northwood, Nottingham, Pittsfield, Strafford.

hicles, and the secondary routes in the densely populated areas. In traffic section 2 they are the principal routes radiating from Keene and the through east-west route through Claremont. In traffic section 5 this classification includes parts of the principal through routes, such as U. S. 3, U. S. 4, and Routes 10, 16 and 18.

Sections carrying between 500 and 1,000 vehicles per day are distributed throughout the State. They comprise 16.7 per cent of the trunk-line mileage in traffic section 1, approximately 65.0 per cent in traffic sections 2 and 3, approximately 40 per cent in traffic section 4, and almost 50 per cent in traffic section 5.

Trunk-line highways carrying less than 500 vehicles per day include 391.4 miles or 26.9 per cent of the total trunk-line highways in the State. This mileage is distributed over all sections of the State varying from 12.2 per cent in traffic section 2 to 52.7 per cent in traffic section 4. The routes and sections of routes in this traffic class are generally those traversing the very sparsely populated areas, which are not a part of the through-traffic routes.

Sections of the State-aid system and the town-road system carrying more than 500 vehicles per day are relatively few in number and short in mileage. On the State-aid system there are approximately 55 miles which carry over 500 vehicle per day, of which only one short section

Table 7.—Area, population, and population density per square mile in the five traffic sections

Traffic section	Area [1]		Population [2]		Population per square mile
	Square miles	Per cent	Persons	Per cent	
1	1,500.4	17.0	261,206	58.9	174.1
2	540.2	6.1	44,179	10.0	81.8
3	1,708.5	19.4	33,301	7.5	19.5
4	669.1	7.6	12,715	2.9	19.0
5	4,403.6	49.9	91,682	20.7	20.8
Total	8,821.8	100.0	443,083	100.0	50.2

[1] Computed from land area by towns as compiled by New Hampshire State Forestry Department, 1924.
[2] United States Census, 1920.

Table 8.—Mileage of trunk-line highways by traffic classes in the five traffic sections of the State

Traffic section	Trunk-line highways	Over 1,500 vehicles per day		1,000 to 1,500 vehicles per day		500 to 1,000 vehicles per day		Less than 500 vehicles per day	
	Miles	Miles	Per cent	Miles	Per cent	Miles	Per cent	Miles	Per cent
1	371.0	163.4	44.1	74.2	20.0	62.1	16.7	71.3	19.2
2	158.9	.....	.....	36.1	22.7	103.4	65.1	19.4	12.2
3	227.1	2.6	1.2	17.7	7.8	146.1	64.3	60.7	26.7
4	120.6	.....	.....	6.8	5.6	50.3	41.7	63.5	52.7
5	576.7	.....	.....	121.5	21.1	278.7	48.3	176.5	30.6
Total	1,454.3	166.0	11.4	256.3	17.6	640.6	44.1	391.4	26.9

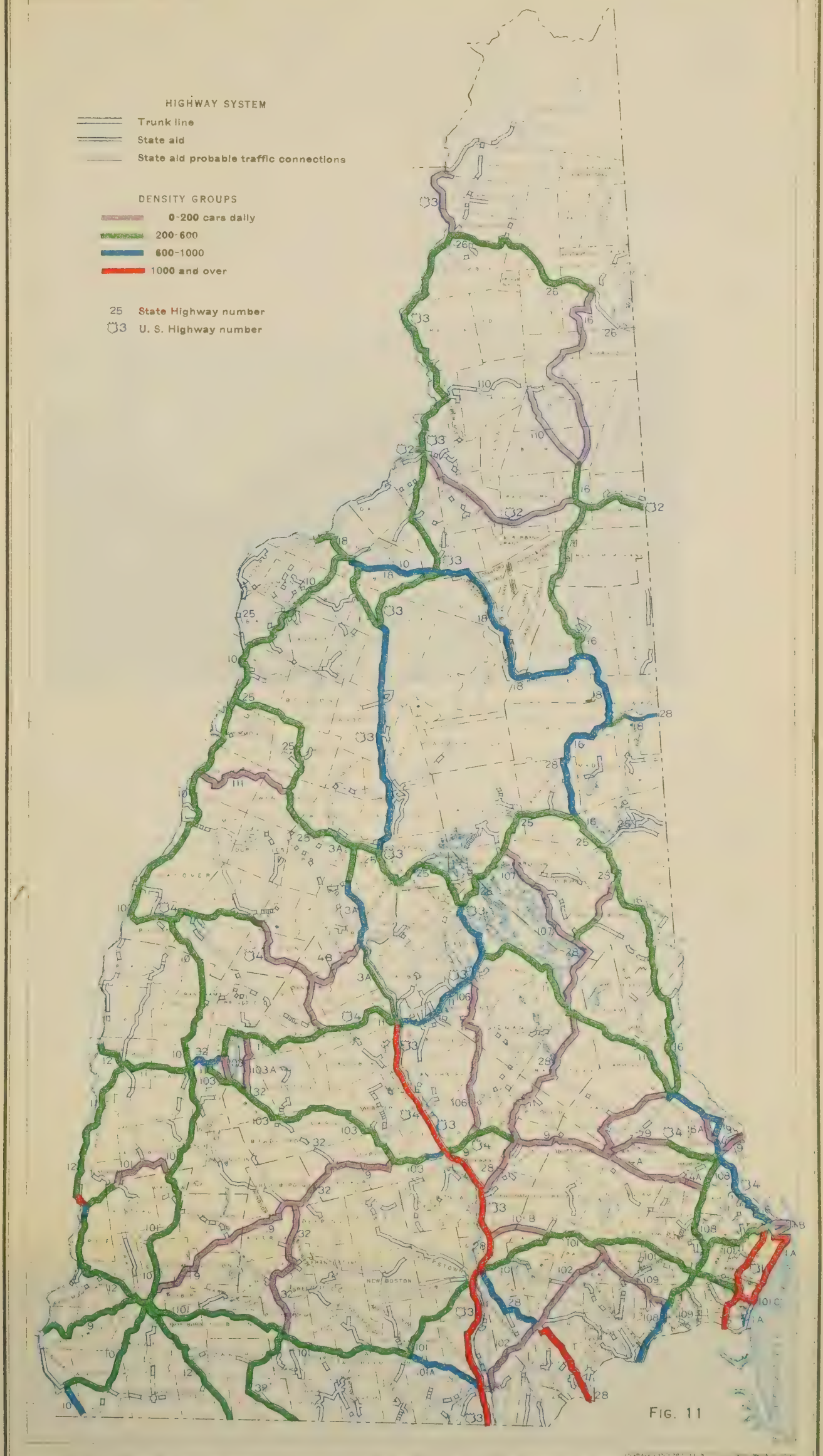


FIG. 11

FOREIGN PASSENGER CAR TRAFFIC ON THE TRUNK-LINE SYSTEM

has a traffic of over 1,500 vehicles per day. On the town-road system, sections carrying over 500 vehicles per day are even smaller in mileage and are limited to a few short sections connecting trunk-line or State-aid roads with villages or railway stations located a short distance from the main road.

Foreign Traffic Large in Volume

Foreign traffic forms a very important part of total traffic on the trunk-line system throughout the entire State. During the period of the survey, foreign passenger car traffic made up slightly over 50 per cent of the total passenger car traffic on the trunk-line system. Foreign truck traffic is of less importance, forming slightly over 10 per cent of the total, and diminishing with increased distance from the State line. Foreign passenger car traffic also diminishes but not to the same extent and is important in all sections of the State.

The distribution of foreign passenger car traffic on the trunk-line highways is shown in Figure 11 and the daily number of foreign passenger cars and motor trucks passing each survey station is shown in Appendix III.

The largest volume of foreign passenger car traffic was found on U. S. 1 from Seabrook to Portsmouth and averaged over 4,000 foreign passenger cars per day. This highway forms part of a through interstate route and the traffic was approximately 75 per cent foreign. Foreign passenger car traffic on Route 1-A from Hampton to Portsmouth, which is an alternate route to U. S. 1, ranged from 1,000 to over 1,600 per day. On route U. S. 3 foreign passenger car traffic was over 2,600 per day from the Massachusetts line to Nashua, between 2,200 and 1,500 from Nashua to Concord, and over 1,000 per day from Concord to Franklin.

Other routes which carried over 1,000 foreign passenger cars per day were Route 28 from the Massachusetts line to Derry, averaging from 1,087 at Derry to 1,728 at the State line, and a short section of Route 101 from the interstate bridge at Bellows Falls to the junction of Route 12, averaging 1,136 per day.

On other through routes traffic of foreign passenger cars forms an important part of total traffic. On U. S. 3 from Franklin to its junction with Route 25 at Meredith the average was between 800 and 1,000 per day, from Meredith to Plymouth between 500 and 600, from Plymouth to Profile House between 800 and 1,000, from Profile House to Lancaster approximately 500 and

The Balsams Hotel in the White Mountain National Forest. Traffic to resort areas results in considerable increase in use of the main highways

from Lancaster to Colebrook between 200 and 400 per day.

On Route 10, average daily traffic of foreign passenger cars was between 470 and 680 from the Massachusetts line to Keene, between 200 and 400 from Keene to the junction with U. S. 4 near Lebanon, over 500 from this junction to West Lebanon where these two routes lap, and between 300 and 400 from this point to Littleton.

A tourist camp in the White Mountains

Route 16 carried over 500 foreign passenger cars from Dover to Jackson, except on the section from Sanbornville to Ossipee where the average was 420, and carried almost 1,000 near Dover. From Jackson to Berlin the average was approximately 300 and from Berlin to Errol approximately 175 per day. The principal east-west through routes also carry a large volume of foreign passenger car traffic. On Route 101 the average from Portsmouth to Manchester was approximately 300 and it remained over 200 almost the entire distance to its western terminus.

On U. S. 4 foreign passenger car traffic varied from over 800 near Portsmouth and 450 west of Franklin to approximately 120 near Canaan and 140 near Northwood. Route 18 carried over 600 foreign passenger cars from the Maine line to Littleton and approximately 500 from Littleton to its western terminus. Foreign passenger car traffic on U. S. 2 varied from approximately 160 to 300 per day.

Of the trunk-line mileage in the State, 96 miles carried more than 1,000 foreign passenger cars per day, 192 miles between 600 and 1,000, 771 miles between 200 and 600, and 395 miles less than 200 per day as shown in Figure 12.

This large volume of foreign traffic, in many

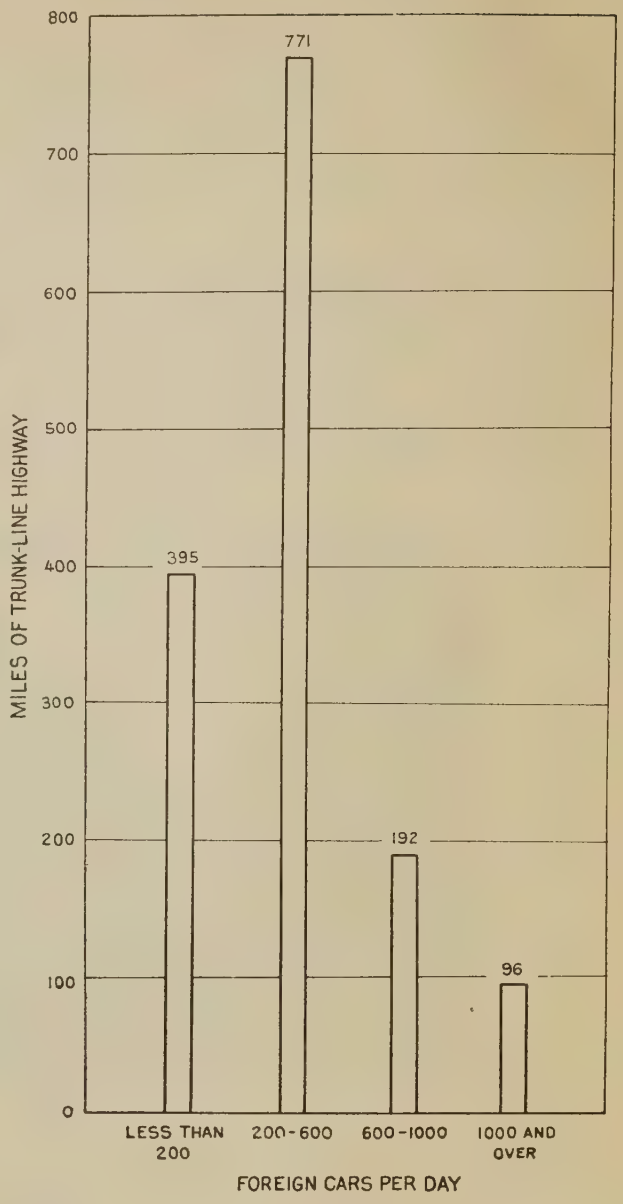


Fig. 12.—Classification of trunk-line highways according to density of foreign passenger cars

cases subjects road surfaces to wear which is beyond their economic capacity where they would be adequate for local traffic. In such cases the foreign traffic increases maintenance costs and makes necessary the earlier reconstruction of these routes with higher types of surfaces. The additional cost of providing highway service for foreign traffic undoubtedly exceeds by a considerable amount the present contribution of foreign cars to New Hampshire highway revenues.

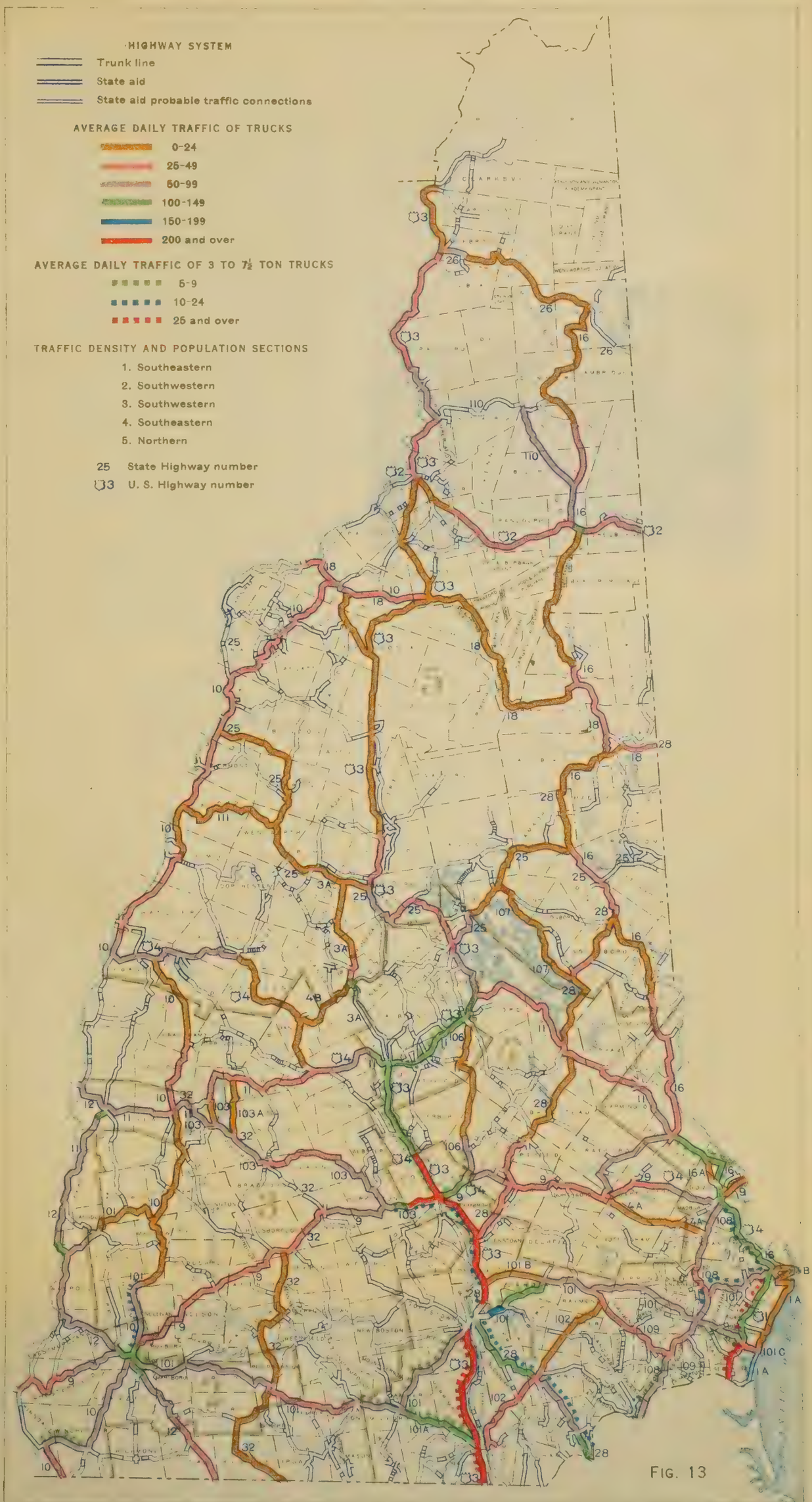


FIG. 13

MOTOR TRUCK TRAFFIC ON THE TRUNK-LINE SYSTEM

MOTOR TRUCK TRAFFIC

Distribution of Motor Truck Traffic

THE motor truck produces a comparatively small but important part of total motor vehicle traffic on rural highways. Truck traffic was only 6.5 per cent of the total motor vehicle traffic on all highways measured in vehicle-miles. The loading and equipment of motor trucks, however, is such as to necessitate a careful analysis of the distribution of such traffic in planning highways. Passenger cars and motor trucks differ greatly in gross weight and particularly in the concentration of loading on the rear wheels. The average gross weight of passenger cars is approximately 2,500 pounds, while that of motor trucks is slightly over 6,000 pounds. Large trucks when heavily loaded exceed 20,000 pounds in gross weight, with as much as 8,000 to 9,000 pounds upon one rear wheel. On U. S. 3, between the Massachusetts line and Nashua, approximately 37 per cent of the trucks observed were equipped with solid or cushion tires on their rear wheels. These features in present-day motor truck equipment and loading are important considerations in the selection and design of improvements on the principal trucking highways of the State.

Motor truck traffic on the trunk-line highway system is shown in Figure 13. The density of motor trucks varies considerably in different parts of the State. Such variations are most easily compared by means of the five traffic sections, shown in Figure 9.

From the standpoint of motor truck density, traffic section 1 is the most important area of the State with an average density of 94 trucks per day on the trunk-line highways. Traffic section 2 is next in importance with an average density of 57 trucks per day. A comparison of the several sections is shown in Table 9.

The high motor truck density in section 1 is due largely to the fact that it is the principal industrial section of the State. Comprising only 17 per cent of the total area, it includes half the cities and towns of over 2,500 population. In it are located the three largest cities of the State, Manchester, Nashua and Concord. There are 3.4 trucks registered in this section for each square mile of area, nearly twice as many per square mile as in traffic section 2 and from 5 to 8 times as many per square mile as in traffic sections 3, 4 and 5. Traffic section 1 also has the greatest volume of foreign truck traffic, resulting from its proximity to the industrial sections of Massachusetts.

Stone arch bridge at Hillsboro, reconstructed in 1925

Traffic section 5 is least important in motor truck transportation with an average of only 30 trucks per day on its trunk-line roads. This section, which includes half of the total area of the State, has only 40 per cent of the trunk-line road mileage. Its motor truck registration averages only 0.4 truck per square mile of area. Only a small part of the total mileage of trunk-line roads in this section carried over 50 trucks per day, as shown in Figure 13.

Of the 1,454 miles of trunk-line highways in the State, 50 miles carried 200 or more trucks per day; 150 miles carried 100 or more; 350 miles carried from 50 to 99; 405 miles carried from 25 to 49; 548 miles carried less than 25, and 953 miles, representing approximately two-thirds of the trunk-line mileage, carried less than 50 trucks, as shown in Figure 14. A small daily truck traffic is usually composed largely of small-capacity trucks equipped with pneumatic tires, and this traffic is of relatively little importance in the planning of highway improvements.

Table 9.—Motor truck density on the trunk-line system; percentage of total trunk-line mileage, percentage of total State area, and truck registration per square mile in the five traffic sections.

Traffic section	Truck density on trunk-line roads (1926)	Percentage of total trunk-line mileage in the State	Percentage of total area of the State	Truck registration per square mile (1925)
1	94	25	17	3.4
2	57	11	6	1.8
3	39	16	19	0.6
4	32	8	8	0.7
5	30	40	50	0.4
Total..	51	100	100	1.1

Important Trucking Routes

The sections of trunk-line highway which carried more than 100 trucks per day are listed in Table 10. The most important trucking route is U. S. 3, from the Massachusetts line to Concord. Between the Massachusetts line and Nashua the daily truck density was 317, between Nashua and Manchester 246, and between Manchester and Concord 228. It is estimated that the density on these sections will increase to 500, 380, and 360 respectively in 1931.

U. S. 3 continues as an important trucking route north to Laconia. Between Concord and Penacook the average truck density was 218, between Penacook and Franklin 133, and between Franklin and Laconia 118. Of the total trunk-line mileage which carried over 100 trucks per day 42 per cent or 62.5 miles was on U. S. 3.

Route 9, from Concord to the Concord west city line, a distance of 4.0 miles, carried an average density of 218 trucks per day. Next in importance is U. S. 1, from the Massachusetts line to Hampton, on which the average daily truck density was 208. The remainder of U. S. 1, from Hampton to Portsmouth, averaged 138 trucks.

These important trucking routes are all in traffic section 1. The relative importance of the

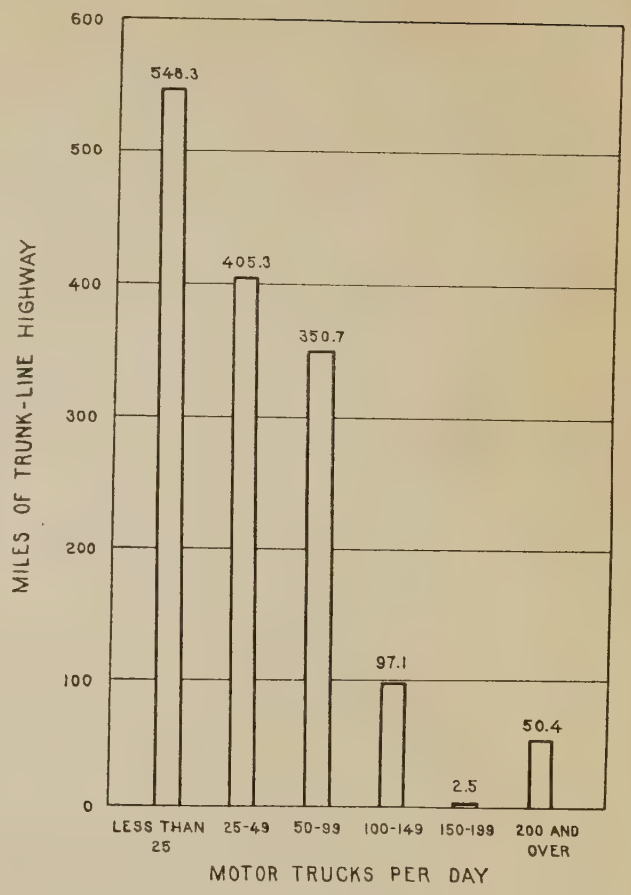


Fig. 14.—Trunk-line highways classified according to density of truck traffic

trunk-line highways in this section as compared with those in other sections is also indicated by the fact that 139.3 miles of the 150.0 miles in the State carrying over 100 trucks per day are located in this section. Of the remaining 10.7 miles carrying over 100 trucks per day 7.0 miles are located in traffic section 2, 2.6 miles in traffic section 3, and 1.1 miles in traffic section 5.

There is a comparatively small mileage of State-aid or town roads which can be considered heavy trucking routes. Appendix IV shows the number of trucks daily by capacity classes at traffic survey stations.

Truck Capacities and Loading

In planning future highway improvements, careful consideration must be given to large-capacity trucks using the highways. These trucks are equipped with cushion or solid tires, carry heavy loads, and a proportionately greater part of the load on the rear axle.

Table 10.—Sections of the trunk-line highway system on which the density of motor trucks in 1926 was over 100 per day

Highway section	Route [1]	Miles	Truck density
Nashua to Massachusetts line	U. S. 3	3.5	317
Nashua to Manchester	U. S. 3	16.4	246
Manchester to Concord	U. S. 3	16.2	228
Penacook to Concord	U. S. 3 & U. S. 4	5.0	218
Concord to Concord west city line	9 & 103	4.0	218
Massachusetts line to Hampton	U. S. 1	5.3	208
Manchester to Manchester east city line	101	2.5	168
Massachusetts line to Salem Depot	28	3.4	142
Keene west to jct. of Routes 9 and 12	9 & 12	1.6	138
Portsmouth to Hampton	U. S. 1	9.4	138
Claremont to road to Claremont Jct	11 & 12	0.5	137
Franklin to Penacook	U. S. 3& U. S. 4	9.0	133
Nashua to Milford	101 A	9.5	132
Keene north to jct. of 9 and 10	9 & 10	1.6	128
Manchester to West Derry	28	11.4	122
N. Walpole southeast to jct. of 12 and 101	12 & 101	1.6	122
Franklin to Laconia	U. S. 3 & 11	10.4	118
Portsmouth to Dover	U. S. 4	9.3	114
Dover to Rochester	16	9.8	113
Keene south to jct. with T. R. to W. Swanzey	12	1.7	112
Manchester east city line to Four Corners	101	5.7	110
Concord to jct. with 106	U. S. 4 & 9	3.9	109
Laconia to jct. with 11	U. S. 3 & 11	2.0	108
Franklin to Franklin west city line	U. S. 4	2.6	106
Hopkinton to Concord west town line	9 & 103	2.6	105
Jct. with 16 to Gorham	U. S. 2	1.1	101
Total miles	.....	150.0	.....

[1] Where the letters U. S. do not precede the route number it is a State route.

Of the loaded trucks observed, 7.8 per cent were of 3-ton rated capacity or larger and 1.8 per cent of 5-ton or larger capacity, as shown in Figure 15.

The average weight of loaded trucks is shown in Table 11. For the most part, these weights represent motor truck loading on the principal highways of the State, and are not representative of motor truck loading on the light-traffic State-aid and town roads. The average weight by capacity classes of loaded trucks is shown in Appendix V.

Although the maximum gross weight permitted on State highways is 20,000 pounds, the average gross weight of loaded 5 to 7½-ton trucks was 22,520 pounds. Gross loads of 20,000 pounds or more were observed for 4.3 per cent of the trucks weighed, as shown in Table 12.

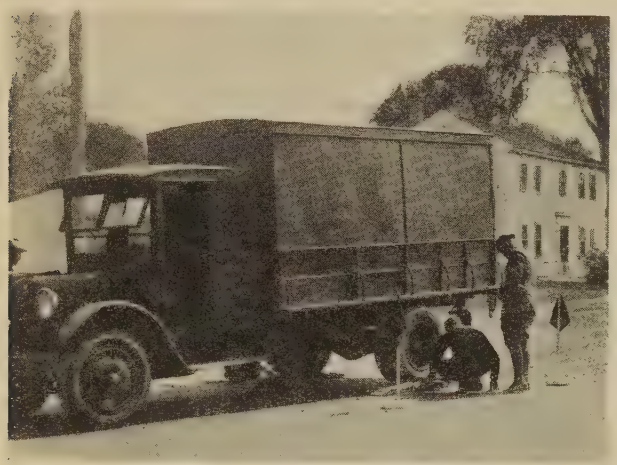
Table 11.—Motor truck average weights by capacity classes

Capacity class	Loaded trucks	Average net weight	Average gross weight
Tons		Pounds	Pounds
½–1½	2,783	1,710	4,940
2 –2½	836	5,570	13,090
3 –4	184	7,230	17,170
5 –7½	103	10,590	22,520
Total	3,906	.....	.....

An analysis of gross loads on U. S. 3, between the Massachusetts line and Nashua (Table 13),

the heaviest trucking route in the State, indicates that trucks with heavy gross loads carry a larger proportion of their weight upon the rear axle.

New Hampshire trucks with gross loads of less than 10,000 pounds carry approximately two-thirds of the weight on the rear axle. Trucks



Determining truck weight with a portable weighing device

Table 12.—Distribution of loaded motor trucks by gross weight

Gross weight	Loaded trucks		Average net weight	Average gross weight
	Number	Per cent		
1,000 pounds			Pounds	Pounds
Less than 5...	1,591	40.7	750	3,400
5– 9.....	1,303	33.4	2,460	6,780
10–14.....	515	13.2	4,950	12,230
15–19.....	329	8.4	8,460	17,480
20 and over...	168	4.3	12,540	23,150
Total....	3,906	100.0	.....	.....

having a gross weight of over 15,000 pounds average approximately 73 per cent on the rear axle. Comparatively few rear-wheel loads in excess of 9,000 pounds were recorded on this section of U. S. 3.

The use of large-capacity trucks varies considerably in the several sections of the State, as shown by Figure 16 and Table 14. In traffic section 1, there was an average density of only two 5 to 7½-ton trucks. In the remaining sec-

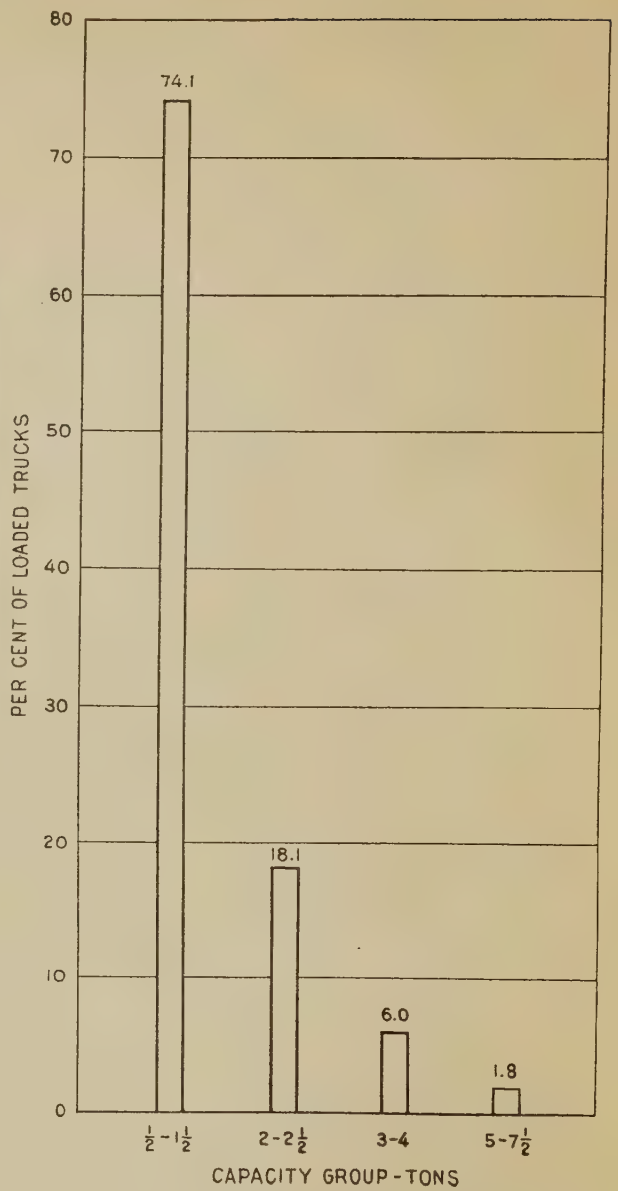


Fig. 15.—*Distribution of loaded motor trucks by capacity groups*

tions there was less than one per day of this capacity. The number of 3 to 4-ton trucks was also greatest in traffic section 1, where the density was six. In traffic section 2 the corresponding density of 3 to 4-ton trucks was three, while in the other traffic areas of the State it was only one. The same relationship is also apparent for 2 to 2½-ton trucks.

It is evident from Table 14 that the trunk-line highways in traffic section 1 carry not only a greater number of trucks, but also a much greater

number of trucks of the larger capacities and heavier loads.

There were 221.2 miles of the trunk-line highways on which there was an average density of 5 or more 3 to 7½-ton trucks, as shown in Table 15 and Figure 17. Of this mileage 34.6 miles carried an average of 25 or more such trucks and 76.9 miles carried between 10 and 25.

U. S. 3, from the Massachusetts line to Concord, and U. S. 1, from Portsmouth to the Massachusetts line, are the most important trucking routes from the standpoint of large-capacity trucks and loading. From Nashua to the Massachusetts line on U. S. 3 there was a daily average of 48 trucks in the 3 to 7½-ton class, of which 20 were of 5-ton capacity or larger. Between

Table 13.—Relation between motor truck gross loading and rear axle loading on U. S. 3 between the Massachusetts line and Nashua

Gross weight class	Loaded trucks	Average gross weight	Average rear axle weight	Proportion of gross weight on rear axle
1,000 pounds		Pounds	Pounds	Per cent
Less than 5.	88	3,340	2,220	66.5
5– 9.....	106	6,970	4,710	67.5
10–14.....	79	12,270	8,670	70.7
15–19.....	65	17,640	12,920	73.3
20 and over.	22	21,650	15,680	72.4
Total....	360	.....	.....	.....

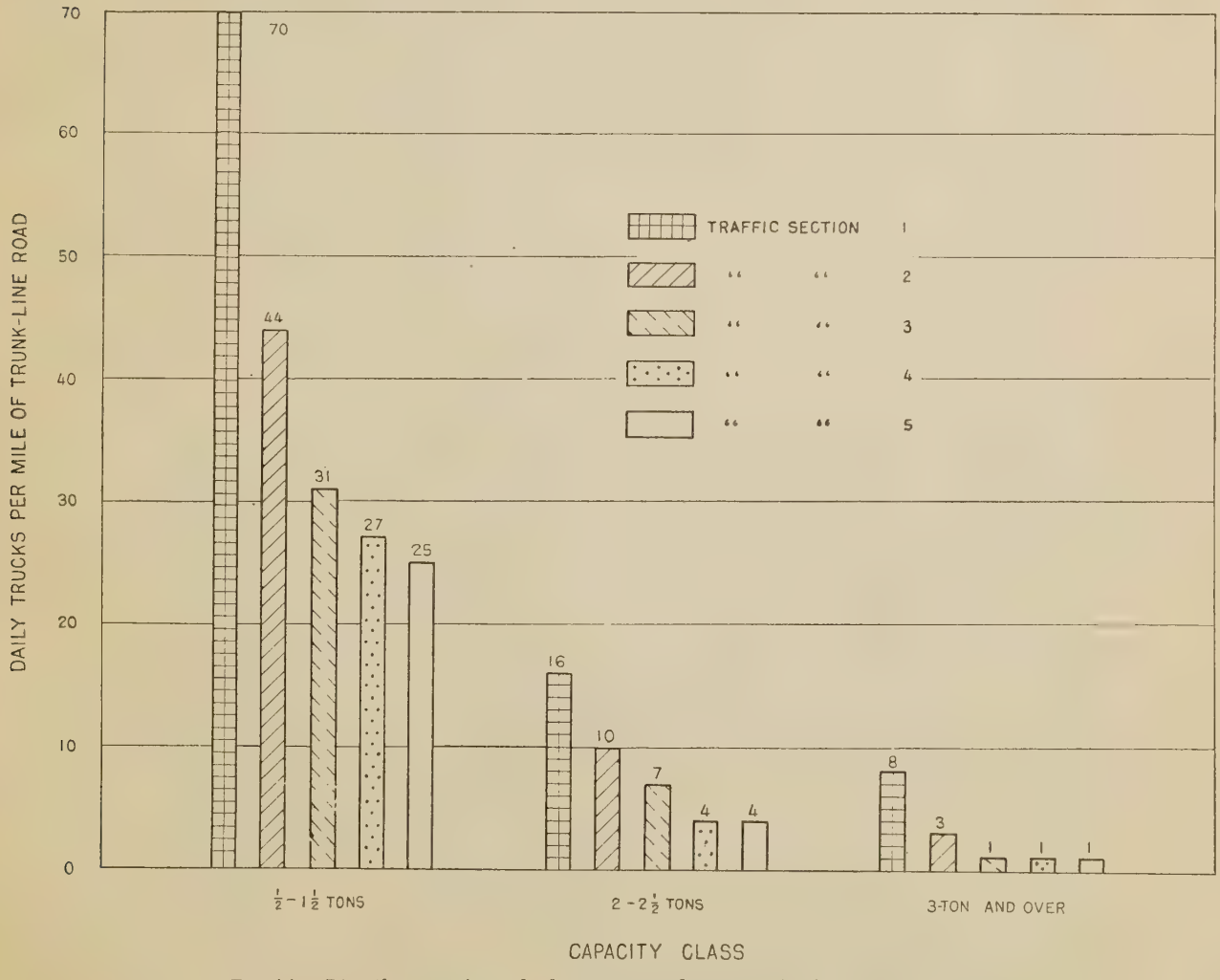


Fig. 16.—Distribution of trucks by capacity classes in the five traffic sections

Table 14.—Motor truck density by capacity classes in the five traffic sections

Traffic section	Daily truck density on trunk-line roads				
	Total	½ to 1½ tons	2 to 2½ tons	3 to 4 tons	5 to 7½ tons
1	94	70	16	6	2
2	57	44	10	3	.....
3	39	31	7	1	.....
4	32	27	4	1	.....
5	30	25	4	1	.....

Nashua and Manchester the density of 3 to 7½-ton trucks was 33, and between Manchester and Concord it was 22. The density of 5-ton trucks or larger was 11 on the Nashua-Manchester section and 5 on the Manchester-Concord section. Between Portsmouth and the Massachusetts line on U. S. 1 there were 26 trucks of the 3 to 7½-ton class, of which 10 were 5-ton or larger.

Of the mileage of trunk-line roads which carried 5 or more 3 to 7½-ton trucks per day, 86.9 per cent was in traffic section 1, 8.1 per cent in traffic section 2, 3.4 per cent in traffic section 3, and traffic section 4 had 1.6 per cent. None of this mileage was located in the northern section. By far the greater part of the use of 3 to 7½-ton trucks occurred in traffic section 1. The use of trucks of 5-ton capacity or larger is also greatest in this section. There were 85.8 miles of trunk-line highway in the State on which there was a daily average of 3 or more trucks of 5-ton capacity or greater. All of this mileage was in traffic section 1.

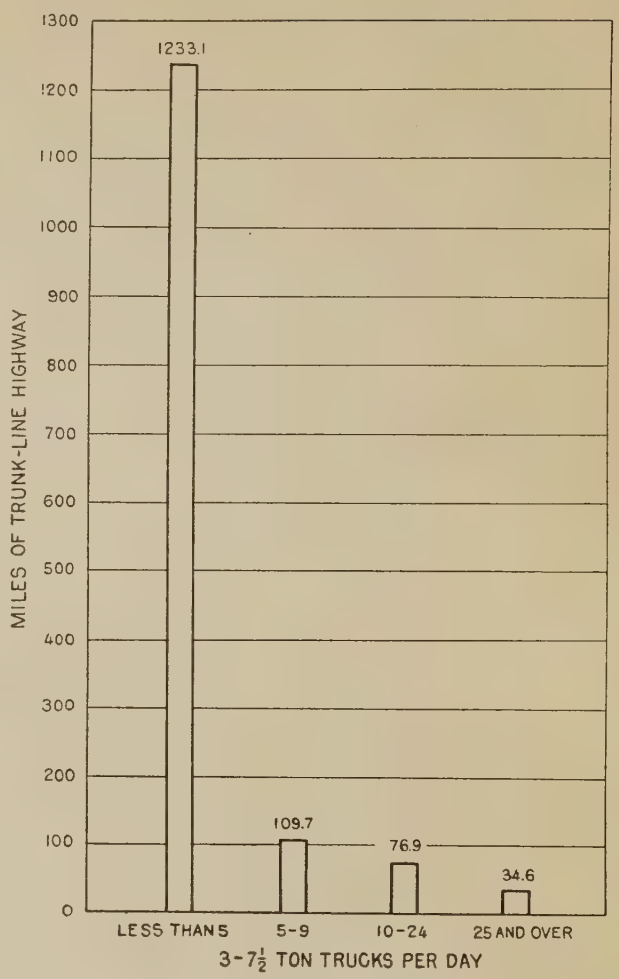


Fig. 17.—Trunk-line highways classed according to density of 3 to 7½-ton trucks

A comparatively small mileage of the State-aid and town roads were found to have a density of 5 or more 3 to 7½-ton trucks.

Table 15.—Sections of the trunk-line highway system on which the density of 3 to 7½-ton trucks in 1926 was 5 or more per day

Highway section	Route	Miles	3 to 7½-ton trucks per day		
			Total	3 to 4-ton	5 to 7½-ton
Massachusetts line to Nashua	U. S. 3	3.5	48	28	20
Nashua to Manchester	U. S. 3	16.4	33	22	11
Portsmouth to Massachusetts line	U. S. 1	14.7	26	16	10
Manchester to Concord	U. S. 3	16.2	22	17	5
Concord to Concord west city line	9 & 103	4.0	21	20	1
Keene to Gilsum	10	9.8	20	20	.....
Portsmouth to Dover	U. S. 4	9.3	19	17	2
Hopkinton to Concord west city line	U. S. 4	2.6	14	14	.....
Manchester to Massachusetts line	28	23.1	12	9	3
Portsmouth to Exeter	101	11.9	11	8	3
Dover to Rochester	16	9.8	9	8	1
Concord to Franklin	U. S. 3 & U. S. 4	14.0	9	8	1
Concord to jct. with Route 106	U. S. 4	3.9	9	9	.....
Dover to Durham	4 A & 108	3.9	9	8	1
Milford to Wilton Center	101	5.0	9	7	2
Franklin to Laconia	U. S. 3 & 11	10.4	8	7	1
Nashua to Milford	101 A	9.5	8	7	1
Keene to jct. of S. A. road at Chesham	101	7.3	7	6	1
Winchester to Hinsdale	10	5.7	6	4	2
Exeter to Hampton	101 C	5.8	6	4	2
Manchester to Milford	101	13.6	6	6	.....
Manchester to Four Corners	101	8.2	6	5	1
Loudon to jct. with U. S. 4	106	3.6	5	5	.....
Massachusetts line to East Kingston	108	9.0	5	4	1
Total	.....	221.2			

Bituminous macadam surface on Route **101** *near Peterborough*

MOTOR BUS TRAFFIC

MOTOR bus traffic, although small in total volume, is important on certain trunk-lines and in a few cases on State-aid roads in the vicinity of the larger cities and the more important recreational areas.

Passenger bus traffic is divided into several distinct types of service as follows: (1) Common carriers, licensed by the New Hampshire Public Service Commission, and operating on regular schedules over fixed routes; (2) common carriers operating on regular schedules over fixed routes in interstate traffic; (3) special tour busses; (4) school busses. During 1926, 34 companies were licensed by the Public Service Commission to engage in the transportation of passengers by motor bus in the State. Routes covered by these operators include approximately 393 miles of trunk-line highways and approximately 100 miles of State-aid routes. This does not include interstate common carriers, which are not subject to regulation by the State Public Service Commission, and which operate over several routes, particularly in the vicinity of the State boundaries.

Special chartered tourist busses are found in the recreational resort areas and on the routes leading to these areas. Such busses frequently make trips of several days' duration.

School busses are local in operation and are not significant in numbers on any route.

A motor bus touring party at Franconia Notch in the White Mountains

The busses vary in size from those carrying five to seven passengers, and similar in all respects to the passenger automobile, to those with a capacity of 20 to 30 passengers. Where the large busses are found in considerable numbers, they are factors in determining the proper width and type of highway surface.

The bus lines in general follow the main routes and a highway adequate to carry other traffic on the route will, with few exceptions, be adequate for the motor bus traffic.

HIGHWAY UTILIZATION

Traffic Importance of the Three Systems

DURING the period of the survey, July 16 to October 15, 1926, motor vehicle traffic on the 12,912 miles of rural highway in the State was approximately 176,548,000 vehicle-miles, an average of 1,919,000 vehicle-miles per day. The distribution of this traffic by classes of highway on the trunk-line, State-aid, and town-road systems is shown in Figure 18. The 1,454 miles of trunk-line highway, constituting 11.3 per cent of the total highway mileage, carried a daily average of 1,332,000 vehicle-miles, or 69.4 per cent of total vehicle-miles; the State-aid system embracing 1,770 miles, or 13.7 per cent of total highway mileage, carried 322,000 vehicle-miles, or 16.8 per cent of the total, and the town-road system with 9,688 miles, or 75.0 per cent of total highway mileage, carried 265,000 vehicle-miles, which was only 13.8 per cent of the total daily vehicle-miles.

Average daily traffic per mile on the trunk-line system was 916 vehicles, on the State-aid system 182 vehicles, and on the town-road system 27 vehicles, as shown in Figure 19.

The predominating importance of the trunk-line system is evident from the fact that it carries approximately 70 per cent of the total traffic, and that average daily traffic is over 900 vehicles per mile. Traffic on this system is concentrated largely on a relatively small part of the system. The traffic in vehicle-miles on the trunk-line system, in accordance with three different methods of dividing the entire system, is shown in Table 16.

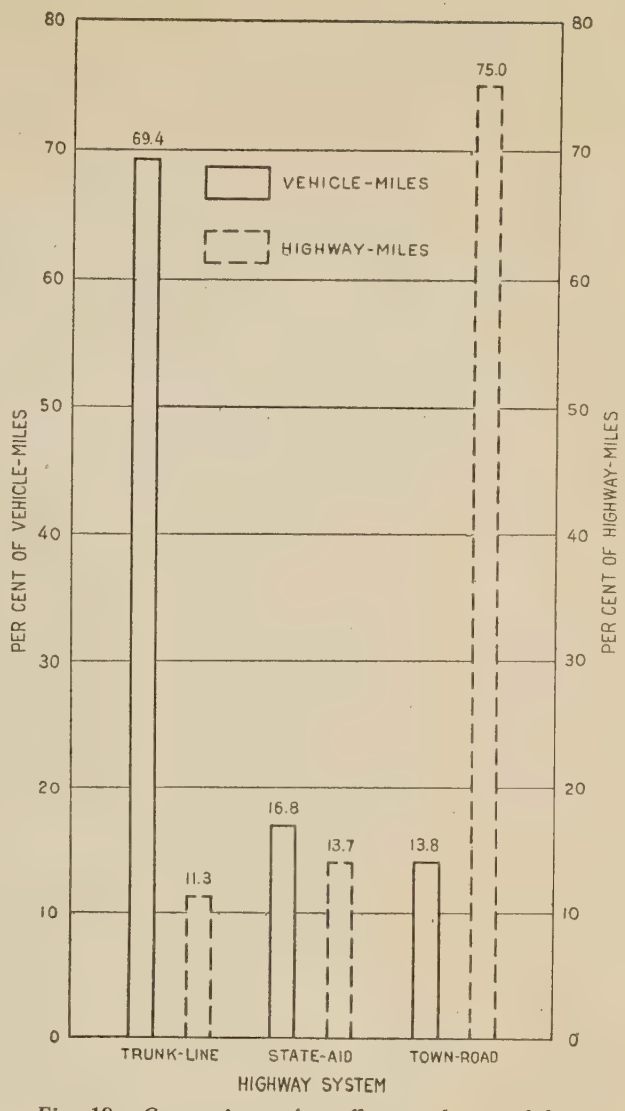


Fig. 18.—Comparison of traffic on the trunk-line, State-aid, and town-road systems

Table 16.—Traffic in vehicle-miles on divisions of trunk-line system in accordance with different methods of dividing the entire system

Section	Miles	Per cent of total mileage	Vehicle-miles	Per cent of total vehicle-miles	Average daily traffic, vehicles
U. S. highways	340	23.4	508,000	38.1	1,496
Other trunk lines	1,114	76.6	824,000	61.9	740
Federal-aid highways	989	68.0	1,076,000	80.8	1,088
Other trunk lines	465	32.0	256,000	19.2	551
Selected heavy-traffic routes	134	9.2	379,000	28.4	2,825
Other trunk lines	1,320	90.8	953,000	71.6	722
Total trunk lines	1,454	100.0	1,332,000	100.0	916

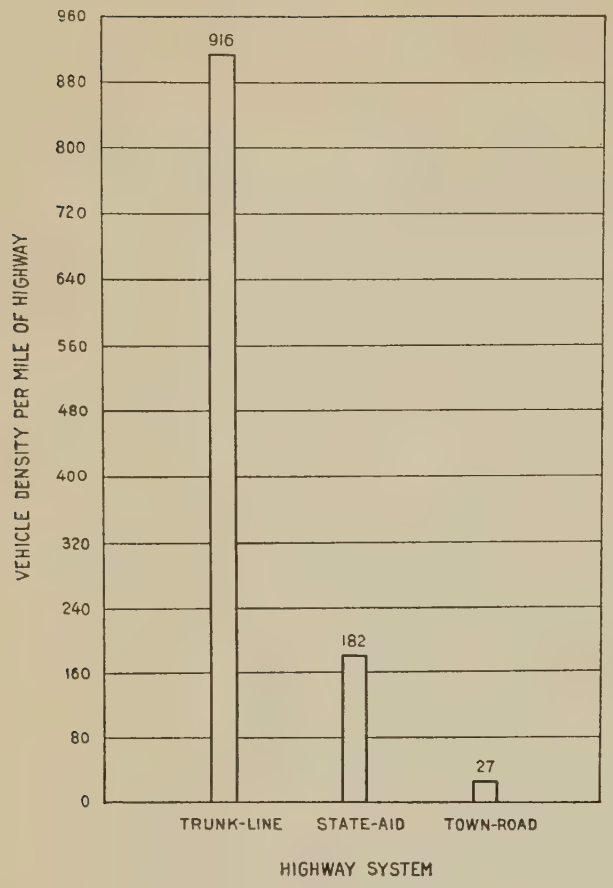


Fig. 19.—Traffic density on trunk-line, State-aid, and town-road systems

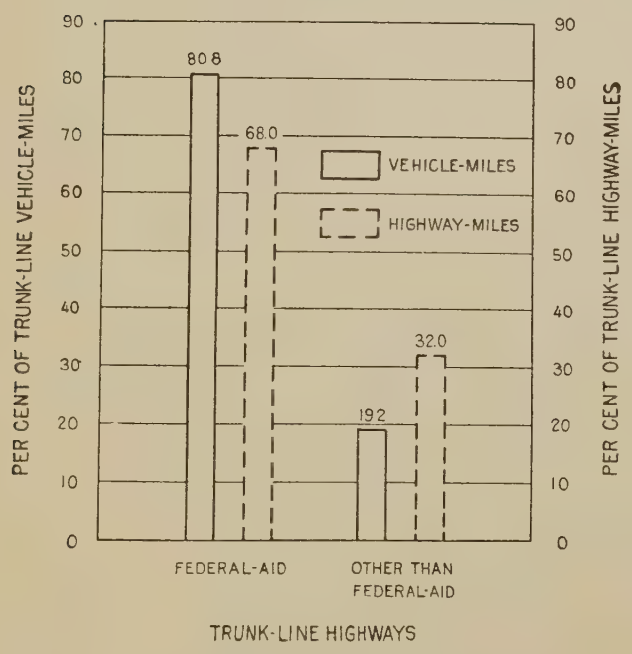


Fig. 20.—Comparison of traffic on Federal-aid and other trunk-line highways

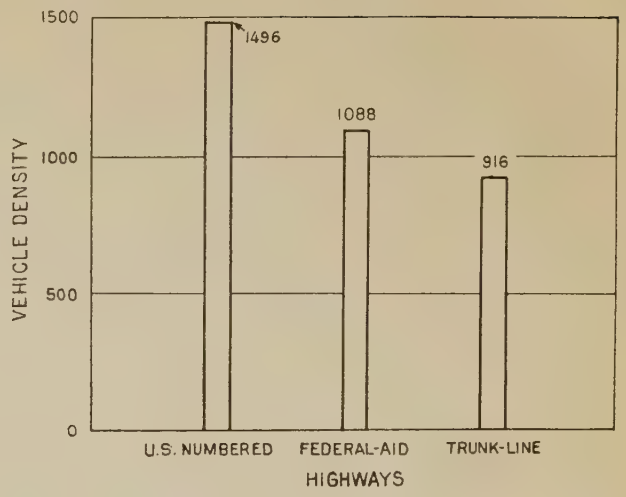


Fig. 21.—Traffic density on the U. S. numbered, Federal-aid and trunk-line highways

The routes selected for uniform numbering by the American Association of State Highway Officials include 340 miles, or 23.4 per cent of the trunk-line mileage, and carry 38.1 per cent of the trunk-line traffic. These routes are U. S. 1, from the Massachusetts line to Portsmouth; U. S. 2, from the Maine line east of Gorham to the Vermont line west of Lancaster; U. S. 3, from the Massachusetts line south of Nashua to West Stewartstown; and U. S. 4, from Portsmouth to West Lebanon.

The Federal-aid system of 989 miles (including approximately 11 miles near cities not actually on this system), constituting 68.0 per cent of the trunk-line mileage, carried 80.8 per cent of the trunk-line traffic, as shown in Figure 20. A comparison of the traffic density on the U. S. routes, the Federal-aid, and the trunk-line system is shown in Figure 21.

Twenty-eight and four-tenths per cent of the trunk-line traffic was found on 134 miles of selected heavy-traffic routes, including U. S. 1, U. S. 3, from the Massachusetts line to Meredith, Route 16 from Dover to Rochester, Route 28 from Manchester to the Massachusetts line and Route 1-A from Hampton to Portsmouth. These routes include only 9.2 per cent of the trunk-line mileage.

The highway mileage and the use of the trunk-line system, the State-aid system and the town-road system by traffic sections are shown in Table 17. For purpose of comparison, the percentage of land area and of population in each section

are also shown in this table. Figure 9 shows the area of the State included in each section.

Motor Vehicle Utilization in the Five Traffic Sections

A comparison of trunk-line mileage and motor vehicle mileage in the five sections is shown in Figure 22, and the traffic density on the trunk-line system in each section is shown in Figure 23.

Traffic section 1 has 45.2 per cent of the use of the trunk-line system, with only 25.5 per cent of the trunk-line mileage and 17.0 per cent of the area. This section, however, includes the principal industrial area of the State and has 58.9 per cent of the total population.

Traffic section 2 has 10.9 per cent of the trunk-line mileage, 10.5 per cent of the trunk-line use, 10.0 per cent of the population and 6.1 per cent

Table 17.—Motor vehicle utilization and mileage of highways in the five traffic sections

Highway system	Highway mileage		Vehicle-mileage		Per cent of total area	Per cent of total population	Average daily traffic
	Miles	Per cent	Miles	Per cent			
Trunk-line system							
Traffic section:							
1	371.0	25.5	602,000	45.2	17.0	58.9	1,620
2	158.9	10.9	140,000	10.5	6.1	10.0	880
3	227.1	15.6	133,000	10.0	19.4	7.5	580
4	120.6	8.3	56,000	4.2	7.6	2.9	460
5	576.7	39.7	401,000	30.1	49.9	20.7	690
Total	1,454.3	100.0	1,332,000	100.0	100.0	100.0	916
State-aid system							
Traffic section:							
1	453.1	25.6	129,000	40.1	17.0	58.9	285
2	78.9	4.4	23,000	7.1	6.1	10.0	292
3	393.2	22.3	66,000	20.5	19.4	7.5	168
4	154.6	8.7	17,000	5.3	7.6	2.9	110
5	690.3	39.0	87,000	27.0	49.9	20.7	126
Total	1,770.1	100.0	322,000	100.0	100.0	100.0	182
Town-road system							
Traffic section:							
1	2,723	28.1	109,000	41.1	17.0	58.9	40
2	842	8.7	34,000	12.8	6.1	10.0	40
3	2,777	28.7	55,000	20.8	19.4	7.5	20
4	692	7.1	14,000	5.3	7.6	2.9	20
5	2,654	27.4	53,000	20.0	49.9	20.7	20
Total	9,688	100.0	265,000	100.0	100.0	100.0	27
All rural highways							
Traffic section:							
1	3,547	27.5	840,000	43.8	17.0	58.9	237
2	1,080	8.3	197,000	10.3	6.1	10.0	182
3	3,397	26.3	254,000	13.2	19.4	7.5	75
4	967	7.5	87,000	4.5	7.6	2.9	90
5	3,921	30.4	541,000	28.2	49.9	20.7	138
Total	12,912	100.0	1,919,000	100.0	100.0	100.0	149

of the area. In the remaining sections highway use is not in proportion to highway mileage. Section 3 has 15.6 per cent of the trunk-line mileage, 10.0 per cent of the traffic, 19.4 per cent of the area and 7.5 per cent of the population. Section 4 has 8.3 per cent of the trunk-line mileage, only 4.2 per cent of the traffic, 7.6 per cent of the area and 2.9 per cent of the population. Section 5, with 39.7 per cent of the trunk-line mileage, has 30.1 per cent of the traffic, almost one-half of the area of the State and 20.7 per cent of the population.

The mileage and traffic on the State-aid and town-road systems in traffic section 1, when compared with the totals for these systems for the State are in approximately the same ratio as is found for the trunk-line system. Traffic section 2 has only 4.4 per cent of State-aid mileage and 7.1 per cent of the traffic on the State-aid system, as compared with 10.9 per cent and 10.5 per cent respectively on the trunk-line system. In traffic section 5 the mileage and traffic on the town-road system is considerably below the proportions of the trunk-line and State-aid systems found in this section.

The lower percentages of town roads and town-road traffic in this section is explained by the large undeveloped areas with no town roads. The trunk-line roads in this section carry a large volume of foreign traffic and traffic originating in other sections of the State.

The State-aid system as shown in Table 17 includes the present improved State-aid roads not on the trunk-line system and a comparatively large mileage of present unimproved roads which connect these State-aid sections and form a continuous highway system.

The traffic on the improved sections of this system was considerably greater than on the unimproved sections. In traffic section 1, average traffic on the improved sections was 369 vehicles per day and in section 2, 356 vehicles per day, while on the unimproved mileage it was only 146 vehicles per day. In the remaining sections, traffic on the improved mileage averaged 171 vehicles per day and on the unimproved sections 84 vehicles per day. The selected connections of the State-aid system greatly exceed the roads of the town system in traffic. In traffic sections 1 and 2,

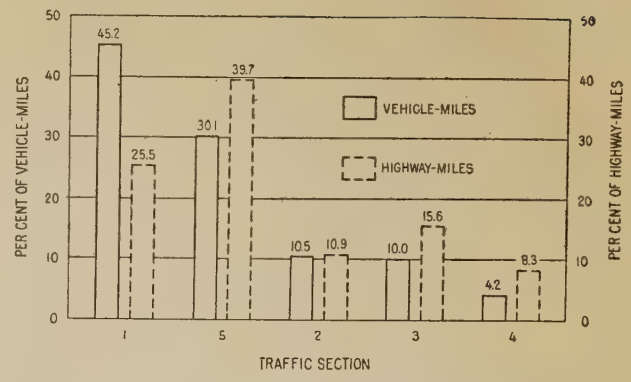


Fig. 22.—Comparison of total traffic on the trunk-line highways in the five traffic sections

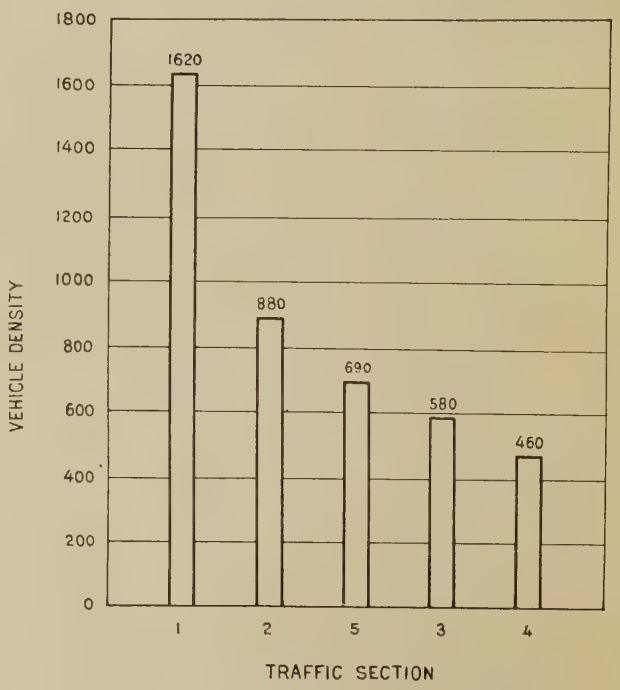


Fig. 23.—Traffic density on the trunk-line highways in the five traffic sections

where average traffic on the State-aid connections was 171 per day, traffic on the town-road system was 40 per day. In sections 3, 4 and 5, the average traffic on State-aid connections was 84 vehicles per day, and traffic on the town-road system was 20.

The distribution of vehicle-miles on the three highway systems by truck-miles and passenger car-miles is shown in Table 18.

The proportion of motor-truck and passenger-car traffic varies considerably in different sections of the State. These variations for the trunk-line and State-aid systems are shown in Table 19.

Table 18.—Motor truck and passenger car utilization of the three highway systems

System	Vehicle-miles			Percentage of total vehicle-miles			Percentage of vehicle-miles on system		
	Motor trucks	Passenger cars	Total	Motor trucks	Passenger cars	Total	Motor trucks	Passenger cars	Total
Trunk-line.....	73,500	1,258,500	1,332,000	59.3	70.1	69.4	5.5	94.5	100.0
State-aid.....	27,700	294,300	322,000	22.4	16.4	16.8	8.6	91.4	100.0
Town-road.....	22,700	242,300	265,000	18.3	13.5	13.8	8.6	91.4	100.0
Total.....	123,900	1,795,100	1,919,000	100.0	100.0	100.0	6.5	93.5	100.0

Table 19.—Passenger car-miles and motor truck-miles on the trunk-line and State-aid highway systems in the five traffic sections

Traffic section	Motor truck-miles	Passenger car-miles	Total vehicle-miles	Per cent of total vehicle-miles			Per cent of vehicle-miles on system		
				Motor trucks	Passenger cars	Total	Motor trucks	Passenger cars	Total
Trunk-line system									
1.....	35,000	567,000	602,000	47.6	45.1	45.2	5.8	94.2	100.0
2.....	9,000	131,000	140,000	12.3	10.4	10.5	6.4	93.6	100.0
3.....	8,700	124,300	133,000	11.8	9.9	10.0	6.5	93.5	100.0
4.....	3,800	52,200	56,000	5.2	4.1	4.2	6.8	93.2	100.0
5.....	17,000	384,000	401,000	23.1	30.5	30.1	4.2	95.8	100.0
Total.....	73,500	1,258,500	1,332,000	100.0	100.0	100.0	5.5	94.5	100.0
State-aid system									
1.....	10,800	118,200	129,000	39.0	40.1	40.1	8.4	91.6	100.0
2.....	1,900	21,100	23,000	6.9	7.2	7.1	8.3	91.7	100.0
3.....	5,800	60,200	66,000	20.9	20.5	20.5	8.8	91.2	100.0
4.....	1,800	15,200	17,000	6.5	5.2	5.3	10.6	89.4	100.0
5.....	7,400	79,600	87,000	26.7	27.0	27.0	8.5	91.5	100.0
Total.....	27,700	294,300	322,000	100.0	100.0	100.0	8.6	91.4	100.0

A heavy snowfall greatly hampers the use of the highways in winter

The trunk-line system, carrying 69.4 per cent of the total traffic on rural highways, carried 70.1 per cent of the passenger car mileage, but only 59.3 per cent of the truck mileage. On the other systems the proportion of truck-mileage is correspondingly higher than the passenger car-mileage. This variation reflects the use of the trunk-line system by pleasure traffic and by foreign traffic. Traffic on the State-aid and town systems is more local in nature. On the trunk-line system motor truck traffic composed only 5.5 per cent of the total traffic. On the State-aid and the town-road systems, 8.6 per cent was motor truck traffic. This approximates closely the proportion of truck traffic found on roads in other States which do not have an abnormal volume of long distance and foreign passenger car traffic, and the difference in the proportions between the trunk-line system and other systems can therefore be attributed to such traffic.

Traffic section 5, with 30.1 per cent of total traffic, had only 23.1 per cent of the motor truck

White Horse Ledge and Mirror Lake, North Conway

traffic of the trunk-line system, and in this section only 4.2 per cent of total traffic was truck traffic. This section, because of its resort areas and small local population and traffic, has the largest proportion of long-distance and foreign passenger car traffic. In comparison, the traffic on the State-aid system is more representative of local conditions and the truck traffic forms twice as great a percentage of the total on the system as is the case on the trunk-line system. Traffic section 1 is traversed by a large part of the traffic from the area south of New Hampshire destined to the mountain section, and 5.8 per cent of the traffic on the trunk lines in the section was composed of trucks. This section is the principal industrial area of the State and the trucking developed locally offsets to some extent the large volume of through passenger car traffic on its main routes.

There is a large volume of traffic using the trunk-line highways in the low population areas of New Hampshire which originates outside of these areas. This presents a difficult problem in financing the required improvement of highways, particularly in the northern part of the State (traffic section 5). The State-aid method of financing involves comparatively large contributions from the local units and places a heavy burden on areas of low population and small wealth. The improvement of the principal traffic routes in these areas, because of the large volume of non-local traffic, is a function of the State.

COMPOSITION OF HIGHWAY TRAFFIC

Passenger Cars

THE comparative use of the trunk-line system by vehicles of New Hampshire and foreign registration, by city and farm-owned vehicles, and by various other classes of vehicle use can be expressed accurately in vehicle-miles.[4]

The total passenger car use of the trunk-line highway system on an average day during the traffic survey was 1,258,500 passenger car-miles. The comparative use of the system by New Hampshire and foreign cars, city and farm-owned cars, cars on touring or non-touring trips, and by cars used primarily for either business or pleasure purposes, is shown in Table 20.

Traffic of foreign passenger cars[5] amounted to 634,100 vehicle-miles per day, or 51.1 per cent of the total passenger car use of the trunk-line system, as shown in Figure 24.

Traffic of farm-owned passenger cars comprised 6.1 per cent, and city-owned passenger car traffic 93.9 per cent of the total passenger car traffic on the trunk-line system as shown in Figure 25.

Farm-owned passenger car traffic forms a very small part of the total traffic on the principal traffic routes. On light-traffic routes not adjacent to centers of population this class forms a larger part of the total traffic as would be expected.

[4] The various types of traffic as used in this and the following section are defined as follows:

State of registration.
New Hampshire includes traffic of all vehicles registered in New Hampshire.
Foreign includes traffic of all motor vehicles not registered in New Hampshire.

Place of ownership.
Farm includes traffic of all motor vehicles owned by persons residing on farms.
City includes traffic of all motor vehicles owned by persons residing in cities, villages or urban areas.

Type of usage.
Business indicates that the car on the trip recorded was being used for business purposes.
Pleasure indicates that the car on the trip recorded was being used for pleasure or recreational purposes.

Type of trip.
Touring includes all trips of more than one day's duration taken primarily for recreation.
Non-touring includes all other trips.

Type of trucking.
For hire includes all trucks engaged in hauling commodities on a contract or tariff basis.

[5] For discussion of distribution of foreign passenger car traffic see pages 31 and 32 and Figure 11.

Touring traffic was 8.6 per cent of total passenger car traffic on the trunk-line highways. It is largely of foreign registration and is found principally on the main through routes and routes leading to points of historic and scenic interest.

Approximately three-fourths of the passenger car traffic on the trunk-line highways is made up of cars used for pleasure and recreational purposes. The major part of this traffic is found on the main through routes of travel, the scenic routes, and the routes in the resort areas.

The different types of passenger car traffic vary greatly in length of trip. The distribution of each type of traffic by length of trip is shown in Table 21.

Of total passenger car traffic, approximately one-third is made up of cars traveling less than 20 miles per trip, one-half of cars traveling less than 50 miles per trip, and one-tenth of cars traveling over 200 miles per trip.

Of traffic composed of New Hampshire cars, over 50 per cent is made up of cars traveling less than 20 miles per trip, and more than three-fourths of cars traveling less than 50 miles per trip.

Foreign traffic on New Hampshire highways is

Table 20.—Composition of passenger car traffic on the trunk-line system

Type of passenger car traffic	Daily passenger car-miles	Per cent of daily passenger car-miles
State of registration:		
New Hampshire	615,400	48.9
Foreign	643,100	51.1
Place of ownership:		
City	1,181,700	93.9
Farm	76,800	6.1
Type of trip:		
Touring	108,200	8.6
Non-touring	1,150,300	91.4
Type of usage:		
Business	309,600	24.6
Pleasure	948,900	75.4
All types	1,258,500	100.0

principally long-distance travel. Only 12.3 per cent of foreign traffic is made up of cars traveling less than 20 miles per trip, 17.5 per cent of cars traveling over 200 miles per trip, and over 50 per cent of cars traveling over 100 miles per trip.

Traffic of farm-owned cars is primarily local in movement as almost 90 per cent is made up of cars traveling less than 20 miles per trip, and 70 per cent of cars traveling less than 10 miles per trip.

Business traffic is also primarily short-trip traffic, as over 50 per cent travel less than 20 miles, and almost three-fourths travel less than 50 miles.

The distribution by length of trip as shown in Table 21 represents total trip mileage from point of origin to point of destination, which, particularly for long distance traffic, includes a considerable mileage on highways of adjacent States. The average total trip-mileage and trip-mileage on highways of New Hampshire for each type of passenger car traffic are shown in Table 22.

The average number of miles traveled on New Hampshire highways per trip by cars of foreign registration is more than double that of New Hampshire cars. The average use of New Hampshire highways per trip by city-owned cars is four times that of farm-owned cars, and that of cars used for pleasure or recreational purposes double that of cars used for business purposes. Cars used for pleasure or recreational purposes also carry a larger number of passengers per car.

Motor Trucks

Motor truck traffic on the trunk-line system amounted to 73,500 truck-miles daily during the period of the survey. The distribution of this traffic according to New Hampshire and foreign registration, type of trucking, and place of truck ownership is shown in Table 23. The proportion of foreign truck traffic is much lower than that of foreign passenger car traffic. As shown in Table 23 and Figure 24, the daily traffic of foreign trucks was 10.9 per cent of the total truck traffic.

Foreign trucks operate principally on the main routes of travel near the southern State boundary.

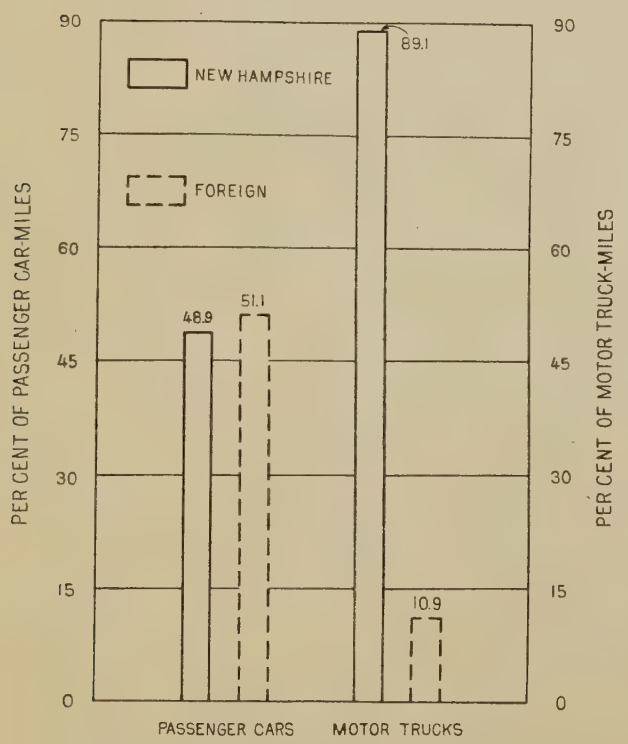


Fig. 24.—Comparison of New Hampshire and foreign traffic on the trunk-line highways

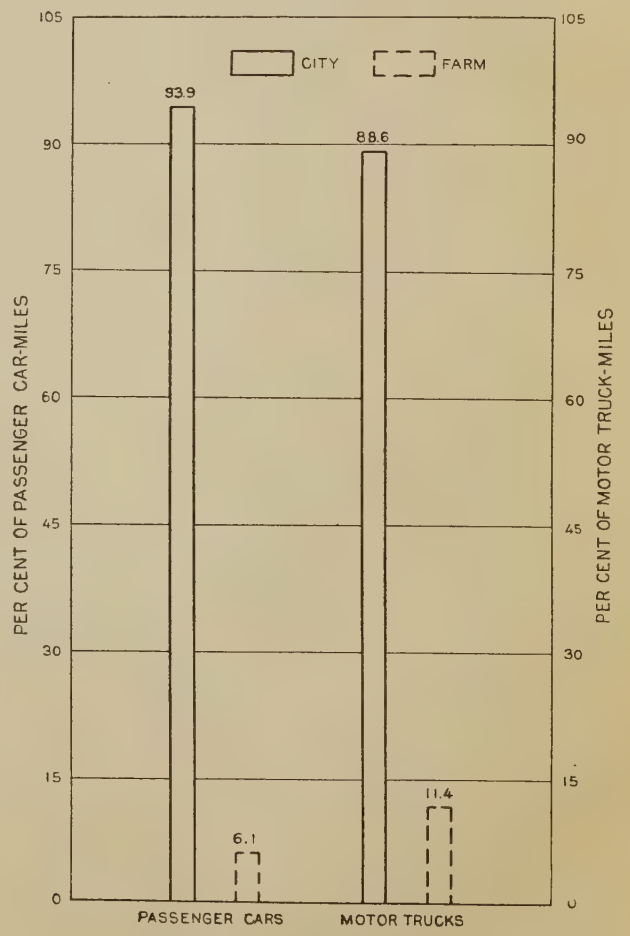


Fig. 25.—Comparison of traffic of city and farm ownership on the trunk-line highways

Table 21.—Distribution of passenger car traffic by length of trip[1]

Trip, miles	Type of passenger car traffic								
	Total	New Hampshire	Foreign	City	Farm	Touring	Non-touring	Business	Pleasure
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Less than 10	18.7	32.1	6.3	17.6	70.3	0.0	20.0	32.3	13.4
10– 19	14.4	23.5	6.0	14.3	18.5	0.0	15.4	21.6	11.6
20– 29	6.4	8.8	4.1	6.5	2.0	0.0	6.8	6.0	6.5
30– 39	6.1	7.3	4.9	6.1	2.0	0.0	6.5	7.7	5.4
40– 49	4.5	5.2	3.9	4.6	0.5	0.0	4.8	5.7	4.1
50– 59	5.0	5.4	4.6	5.0	2.1	2.3	5.1	4.5	5.1
60– 69	4.5	4.2	4.8	4.6	1.0	1.2	4.7	3.7	4.8
70– 79	3.6	2.3	4.8	3.7	0.0	1.8	3.7	2.2	4.1
80– 89	3.7	2.5	4.8	3.8	0.0	1.0	3.9	2.6	4.2
90– 99	2.8	1.8	3.8	2.9	0.0	2.5	2.9	1.4	3.4
100–149	14.5	4.6	23.7	14.8	3.6	12.3	14.6	8.5	16.9
150–199	6.3	1.5	10.8	6.4	0.0	11.2	6.0	2.4	7.8
200–299	4.5	0.6	8.1	4.6	0.0	17.0	3.7	1.1	5.9
300 and over	5.0	0.2	9.4	5.1	0.0	50.7	1.9	0.3	6.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Based upon a total of 9,089 cars.

Table 22.—Average mileage per trip and average passenger per car for various types of passenger car traffic

Type of traffic	Average mileage per trip[1]		Average number of passengers per car
	Total	On New Hampshire highways	
State of registration:			
New Hampshire	34	27	2.8
Foreign	137	64	3.0
Place of ownership:			
City	89	48	2.9
Farm	13	12	2.3
Type of trip:			
Touring	370	112	3.3
Non-touring	68	39	2.9
Type of usage:			
Business	40	27	1.9
Pleasure	106	52	3.2

[1] Averages shown are the arithmetic mean of trip-mileage of cars observed.

Table 23.—Composition of motor truck traffic on the trunk-line highway system

Type of truck traffic	Average daily truck-miles	Per cent of total daily truck-miles
State of registration:		
New Hampshire	65,500	89.1
Foreign	8,000	10.9
Type of trucking:		
For hire	12,700	17.3
Other than for hire	60,800	82.7
Place of ownership:		
City	65,100	88.6
Farm	8,400	11.4
Total	73,500	100.0

Except in this area, foreign trucking is largely limited to long-distance transportation of household goods.

The use of the trunk-line highways by trucks operated for hire totals 12,700 truck-miles per day or 17.3 per cent of the total truck traffic on these highways. Of the traffic of trucks operated for hire, 69 per cent is produced by trucks hired

on a contract basis and 31 per cent by trucks transporting commodities on a tariff basis.

The daily traffic of farm-owned trucks on the trunk-line system is 8,400 truck-miles, of 11.4 per cent of the total truck traffic on these highways, as shown in Figure 25.

Table 24 shows that motor truck traffic is primarily a local and short-haul movement.

Over one-half of the total motor truck traffic on the trunk-line highways is made up of trucks traveling less than 20 miles per trip, and over three-fourths of trucks traveling less than 50 miles. Only 5 per cent is made up of trucks traveling 100 or more miles per trip.

Of the total net tonnage transported by motor trucks, 47.3 per cent is hauled less than 20 miles and 62.9 per cent less than 40 miles. The fact that 70.9 per cent of the truck traffic moving less than 40 miles per trip includes only 62.9 per cent of the net tonnage indicates smaller capacities and lighter loading for the short hauls. Trips of 50 miles or more include 23.7 per cent of the truck traffic and 30.5 per cent of the net tonnage.

The distribution by length of trip, as shown in Table 24, represents total trip from point of origin to point of destination, which, particularly for the longer trips, includes the mileage traveled on highways of adjacent States. The average total trip-mileage and trip-mileage on highways of New Hampshire, together with average gross weight and average weight of cargo per truck, is shown in Table 25.

The average mileage on New Hampshire highways per trip by foreign trucks is almost double that of New Hampshire trucks. Foreign trucks are, on the average, considerably heavier than trucks registered in New Hampshire and carry a larger average cargo.

There is no considerable difference in the trip mileage on New Hampshire highways by trucks operated for hire and other trucks. The average gross weight of the trucks operated for hire is greater than that of other trucks and the weight of cargo is more than double that of other trucks. These variations indicate the use of larger capacity trucks by operators for hire and also loading more nearly to capacity in this type of trucking.

Traffic of farm-owned trucks is made up of short-haul movements of small-capacity trucks. The average trip-mileage of farm-owned trucks is only half that of city-owned trucks, and the average cargo weight is less than half that of city-owned trucks.

Table 24.—Distribution of motor truck traffic by length of trip[1]

Trip-miles	Motor trucks	Net tons
	Per cent	Per cent
Less than 10	28.5	25.6
10–19	24.7	21.7
20–29	10.5	9.4
30–39	7.2	6.2
40–49	5.4	6.6
50–59	8.1	10.7
60–69	4.1	6.1
70–79	2.3	3.1
80–89	2.4	2.5
90–99	1.5	2.2
100 or over	5.3	5.9
Total	100.0	100.0

[1] Based on 3,906 loaded trucks.

Table 25.—Average mileage per trip and average weights per loaded truck

Type of truck traffic	Average mileage per trip[1]		Average weight	
	Total	New Hampshire highways	Cargo	Gross
			Pounds	Pounds
State of registration:				
New Hampshire	23	18	2,790	7,310
Foreign	67	32	4,210	9,760
Type of trucking:				
For hire	40	23	5,470	11,840
Other than for hire	28	20	2,540	6,910
Place of ownership:				
City	32	22	3,170	8,030
Farm	14	11	1,430	4,290

[1] Averages are the arithmetic mean of trip-mileage of trucks observed. This average is influenced by the relatively small number of long trips, but provides a reliable basis for comparing the various types of traffic.

HIGHWAY TRAFFIC AND POPULATION

HIGHWAY traffic is primarily the result of local transportation. However, on routes serving a large volume of through traffic, the proportion of local traffic is correspondingly lower, and on the main routes in undeveloped areas of low population local traffic becomes secondary to foreign traffic. On the trunkline system of New Hampshire 63.7 per cent of the truck traffic is composed of trucks traveling less than 30 miles per trip. Of the traffic of passenger cars registered in New Hampshire, 64.4 per cent is made up of cars traveling less than 30 miles per trip. Including passenger car traffic of foreign registration, which comprises slightly over 50 per cent of the total passenger car traffic, 39.5 per cent is made up of cars traveling less than 30 miles per trip. Over 60 per cent of the truck traffic and of traffic of passenger cars registered in New Hampshire is produced within 30 miles of the highway used by such traffic. Traffic may, therefore, be expected to vary closely with population and motor vehicle ownership in the area. In the areas where foreign traffic is predominant the correlation between traffic and population will be less pronounced.

The five traffic sections into which the State has been divided according to distinguishing characteristics have already been described.[6] Traffic section 1 includes the relatively densely populated and industrial area of southeastern New Hampshire. Section 2 includes the secondary industrial section of the State located along the Connecticut River valley and extending eastward to include Keene and Peterboro. Section 3 includes the area lying between the Merrimack and Connecticut River valleys. Section 4 includes the sparsely populated and undeveloped area located south of Lake Winnepesaukee. Section 5 includes the counties of Carroll, Coos, and Grafton. With the exception of the cities and villages of Berlin, Conway, Gorham, Hanover, Haverhill, Lancaster, Lebanon and Littleton, this area is largely undeveloped and very sparsely populated.

[6] See Figure 9 and page 29.

The relationship between traffic and population is shown in Figure 9. The greater density of traffic in and adjacent to the area of densest population is evident. The distribution of population as shown in Figure 9 is summarized in Table 26.

Route U. S. 3 near Laconia. Modified asphalt construction

Only 7.4 per cent of the area of the State has a population of over 100 per square mile, and 59.8 per cent of the poulation resides in this area. Two-thirds of the area of the State has a population of less than 25 persons per square mile and in this area only 14.4 per cent of the population resides.

In traffic section 1, 30 per cent of the area has a population of 100 or more per square mile, and in this area 83.9 per cent of the population resides. Less than one per cent of the population is included in areas of less than 25 persons per square mile. In traffic section 2, population in areas of less than 25 per square mile is also small.

Traffic section 4 has no area with 100 or more persons per square mile, and 90 per cent of the area has less than 25 persons per square mile.

A comparison of area, population, motor vehicle registration, highway mileage and highway traffic

Table 26.—Area[1] and population of the five traffic sections of the State classified by density of population per square mile in 1920

Traffic section	Per cent of area having population in 1920 per square mile of			Per cent of population residing in areas having a population in 1920 per square mile of		
	0 to 24	25 to 99	100 and over	0 to 24	25 to 99	100 and over
1	9.2	60.5	30.3	0.9	15.2	83.9
2	22.6	62.9	14.5	4.3	48.8	46.9
3	77.4	22.2	0.4	54.7	41.2	4.1
4	90.0	10.0	.....	74.2	25.8	.....
5	83.4	14.1	2.5	35.0	39.3	25.7
Total	66.4	26.2	7.4	14.4	25.8	59.8

[1] Area computed from land area by towns as compiled by New Hampshire State Forestry Department, 1924.

in the five traffic sections of the State is shown in Table 27.

Traffic section 1, with 17.0 per cent of the area of the State, approximately one-fourth of the road mileage, nearly 60 per cent of the population and over 50 per cent of the motor vehicle registration, has approximately 45 per cent of total highway traffic. In contrast with this area, traffic section 5 has approximately 50 per cent of the area of the State, 30 per cent of total highway mileage, 40 per cent of trunk-line mileage, 20 per cent of the population, 22 per cent of the motor vehicles, and 28 per cent of the total traffic. The relatively small mileage of highways in this section is apparent. Traffic sections 1, 2 and 3 have approximately two miles of highway per square mile of area, while section 5 has less than one mile of highway per square mile of area.

The traffic characteristics of these sections as indicated by the data shown in Table 27 is summarized as follows:

1. Traffic section 1, with over one-half of the population and motor vehicles of the State in 17.0 per cent of the area, forms the most important traffic area of the State. The local traffic originating in the area is large, and to this is added the through traffic on the main routes. Local traffic on these routes is large in volume and through traffic does not therefore increase the cost of highway service to the same degree as it does in the sections having a small volume of local traffic. This section is increasing slowly in population and local traffic may therefore be expected to continue to increase. The principal demand for high-type improvements to meet traffic requirements is and will continue to be largely in this section.
2. Traffic section 2 is somewhat similar to section 1, but is smaller in area and less highly developed industrially. It is increasing in population more rapidly than any other section, and the demand for highway improvements may, therefore, be expected to increase more rapidly during the immediate future.
3. Traffic section 3 is decreasing in population and has a present low level of traffic. Local traffic will increase very slowly and the principal need for improvements will be on routes carrying through traffic between other sections and the connection of the present improved sections.
4. Traffic section 4 is small in area, low in present population, and decreasing in population more rapidly than any other section. This section is traversed by few through routes and traffic will continue to be relatively small.

Table 27.—Area, population, motor vehicle registration, traffic and highway mileage in the five traffic sections

Traffic section	Area [1] square miles	Rural highway miles		Population		Motor vehicle registration 1925	Average daily vehicle-miles	
		Trunk-line	Total	1910	1920		Trunk-line	Total rural highways
1	1,500.4	371.0	3,547	248,791	261,206	43,214	602,000	840,000
2	540.2	158.9	1,080	40,557	44,179	9,579	140,000	197,000
3	1,708.5	227.1	3,397	37,729	33,301	7,678	133,000	254,000
4	669.1	120.6	967	14,774	12,715	2,926	56,000	87,000
5	4,403.6	576.7	3,921	88,721	91,682	18,101	401,000	541,000
Total	8,821.8	1,454.3	12,912	430,572	443,083	81,498	1,332,000	1,919,000

Traffic section	Per cent of total							Population increase 1910–1920, per cent	Population per square mile
	Area	Highway miles		Population 1920	Motor vehicle registration 1925	Vehicle-miles			
		Trunk line	Total			Trunk line	Total		
1	17.0	25.5	27.5	58.9	53.0	45.2	43.8	5.0	174.1
2	6.1	10.9	8.3	10.0	11.8	10.5	10.3	8.9	81.8
3	19.4	15.6	26.3	7.5	9.4	10.0	13.2	−11.7	19.5
4	7.6	8.3	7.5	2.9	3.6	4.2	4.5	−13.9	19.0
5	49.9	39.7	30.4	20.7	22.2	30.1	28.2	3.3	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2.9	50.2

Traffic section	Daily vehicle-miles on trunk lines per				Daily vehicle-miles on all highways per			
	Square mile	Mile of trunk-line highway	Person	Registered motor vehicle	Square mile	Highway mile	Person	Registered motor vehicle
1	401	1,623	2.3	13.9	560	237	3.2	19.4
2	259	881	3.2	14.6	365	182	4.5	20.6
3	78	586	4.0	17.3	149	75	7.6	33.1
4	84	464	4.4	19.1	130	90	6.8	29.7
5	91	695	4.4	22.2	123	138	5.9	29.9
Total	151	916	3.0	16.3	218	149	4.3	23.5

[1] Computed from land area by towns as compiled by New Hampshire State Forestry Department, 1924.

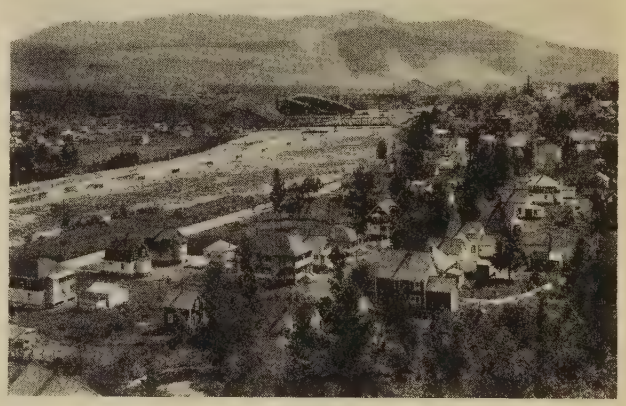
5. Traffic section 5 has a low present population which is increasing slowly, but the increase is limited to a very few towns and cities. Approximately 55 per cent of the entire population of the area is located in Berlin city and the 11 largest towns in the section. Except in the immediate vicinity of these towns local traffic is very small and will continue to remain proportionately small in volume. Through traffic is of great importance on the trunk-line system and will increase with the further development of recreational resorts in this area. These routes will require higher type improvements as traffic increases.

FORECAST OF HIGHWAY TRAFFIC

SINCE no adequate historical series of traffic records are available in New Hampshire, it is impossible to forecast traffic directly upon past highway traffic trends. Traffic counts were made by the New Hampshire Highway Department in 1918 and 1922, but the location of observation points was not in close enough agreement with those of the 1926 survey to permit an accurate comparison of traffic increase.

In States where historical series of traffic records are available, highway traffic and motor vehicle registration have been found to increase at equal rates. A comparison of highway traffic and motor vehicle registration in Maine, Maryland, Massachusetts, Michigan, and Wisconsin is shown in Figure 26.[7]

In these States highway traffic and motor vehicle registration have increased at approximately equal rates, despite variations in geographic location, industrial development, population density, and rates of population increase. New Hampshire varies from these States with respect to traffic growth principally in the volume of foreign traffic on the more important highways. The proportion of foreign traffic on New Hampshire highways was recorded during the traffic counts of 1918 and 1922. A comparison of these data with traffic records on the same routes obtained during the 1926 survey indicates that foreign traffic was 41 per cent of the total in 1918, 40 per cent of the total in 1922, and 48 per cent of the total in 1926.[8]



Bird's-eye view of Berlin, the principal source of local traffic in northern New Hampshire

These data indicate that foreign traffic is increasing slightly more rapidly than local traffic, and that a forecast of total traffic based on motor vehicle registration in the State would be conservative, and for a short period of years would represent total traffic with reasonable accuracy.

Motor vehicle registration can be predicted on the basis of exact records available since 1913. The increase in motor vehicle registration is a function of two variables, (1) the increase in population, and (2) the increase in ownership and use of motor vehicles in proportion to population, measured by the number of persons per motor vehicle.

[7] For detailed presentation of highway traffic and motor vehicle registration data in these States see "Report of a Survey of Transportation on the State Highway System of Connecticut," 1926; "The Maine Highway Transportation Survey," Public Roads, vol. 6, No. 3, May, 1925; and "Report of a Survey of Transportation on the State Highway System of Ohio," 1927.

[8] In Vermont, which also has a large volume of foreign traffic, such traffic at 32 comparable points was found to be 38.1 per cent of the total in 1924, and 38.6 per cent of the total in 1926.

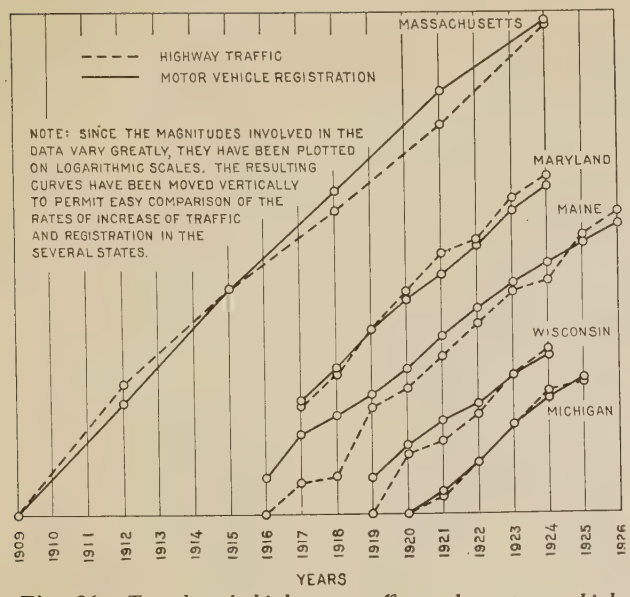


Fig. 26.—*Trends of highway traffic and motor vehicle registration in Massachusetts, Maryland, Maine, Wisconsin and Michigan.*

Population, motor vehicle registration and persons per car from 1913 to 1926, and extensions to 1936, are shown in Table 28. The persons per car for each year from 1913 to 1926, and the extension of the trend to 1936, are shown in Figure 27.

The trend of motor vehicle registration in New Hampshire from 1913 to 1926, inclusive, indicates an increase in registration of 52.1 per cent between 1926 and 1931, and of 37.5 per cent between 1931 and 1936, or an increase of 109.1 per cent for the ten-year period from 1926 to 1936.[9]

Reinforced concrete bridge at Pembroke town line on Route U. S. 3

These rates of increase will apply to the State as a whole. In sections of the State the rate of increase will vary with the local rate of population change and with the rate of change in persons per car.

[9] Based on actual registration in 1926, which is the measure of traffic for this year, and estimated registration in 1931 and 1936.

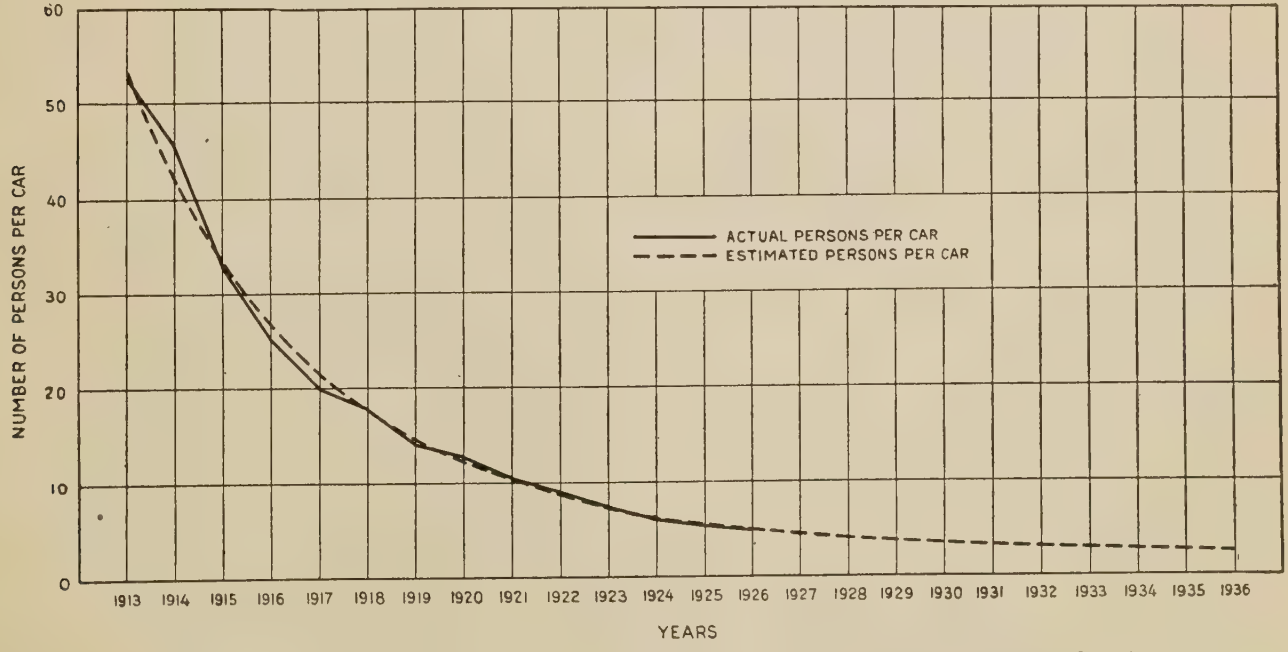


Fig. 27.—Number of persons per car in New Hampshire by years from **1913** *to* **1936**, *based on estimated population for intercensal years*

Table 28.—Comparison of population and the number of motor vehicles in the State of New Hampshire

Year	Population [1] (hundreds)	Registration of motor vehicles (hundreds)		Persons per car	
		Actual	Estimated	Actual	Estimated
1913	4,347	82	81	52.8	53.5
1914	4,360	96	104	45.6	41.7
1915	4,373	134	132	32.5	33.1
1916	4,386	175	166	25.0	26.4
1917	4,399	223	206	19.8	21.3
1918	4,412	248	252	17.8	17.5
1919	4,424	316	305	14.0	14.5
1920	4,437	347	366	12.8	12.1
1921	4,450	420	435	10.6	10.2
1922	4,463	484	512	9.22	8.73
1923	4,476	596	597	7.51	7.50
1924	4,489	709	690	6.33	6.50
1925	4,502	815	793	5.52	5.68
1926	4,515	890	904	5.07	5.00
1927	4,527	.....	989	.....	4.58
1928	4,540	.....	1,077	.....	4.22
1929	4,553	.....	1,168	.....	3.90
1930	4,566	.....	1,261	.....	3.62
1931	4,579	.....	1,354	.....	3.38
1936	4,643	.....	1,861	.....	2.50

[1] Population as of July 1, each year. For the years 1913 to 1923, inclusive, the populations given are Bureau of Census estimates. Those for the years 1924 to 1936, inclusive, are extensions by method used by the Bureau of the Census.

To determine the relative rate of change in persons per car in areas of varying population density and varying rates of population change, an analysis was made of motor vehicle registration by towns for the years 1922 to 1925, inclusive. A summary of this analysis is shown in Table 29.

Despite variations in population density, population trends and present persons per motor vehicle, the rate of decrease in persons per motor vehicle remains practically uniform. Variations in the rate of motor vehicle increase in different sections of the State are, therefore, produced by variations in the rate of population change.

Consideration of the rates of population change in the town groups shown in Table 29 in conjunction with the anticipated decrease in persons per motor vehicle results in estimated rates of increase in motor vehicle registration, as shown in Table 30.

The rates of motor vehicle increase as shown in Table 30 may be expected to measure the rate of increase in local traffic on the routes in these areas. On routes which carry relatively large volumes of traffic originating outside the local area, the increase in traffic may be expected to be greater than the increase in local motor vehicle registration.

These rates of increase in registrations have been applied to the traffic on routes within each area, except in cases of routes carrying a large volume of through traffic. In such cases the rate of increase applicable to a larger area which includes the principal sources of traffic on such a route, has been used.

Table 29.—Comparison of the rate of decrease in persons per car by sections of the State, 1922 to 1925

Town group	Population per square mile 1920	Population increase 1910 to 1920	Persons per motor vehicle		Ratio of persons per motor vehicle 1925 to 1922
			1922	1925	
I	0–24	−11.7	7.17	4.18	0.583
II	25–99	−1.4	7.54	4.45	0.590
III	100 and over	9.3	10.96	6.63	0.605
State		2.9	9.22	5.52	0.599

Table 30.—Estimated rates of increase in motor vehicle registration in sections of the State

Town group	Estimated increase in registration, per cent	
	1926 to 1931	1926 to 1936
I	39.1	73.5
II	48.9	99.9
III	56.1	119.2
State	52.1	109.1

The estimated traffic in 1931 at each traffic survey station is shown in Appendix II.

Industrial and recreational resort development, as well as changes affecting the present highway system as to location of routes, routing of traffic, and condition of improvement, will influence traffic on short sections of highway, and it is not expected that the estimates of traffic in 1931 and 1936 will in all cases reflect the actual traffic on each section of highway in these years, but it is believed that the estimates will reflect with reasonable accuracy highway traffic on the trunk-line highway system.

TRAFFIC CLASSIFICATION OF THE TRUNK-LINE HIGHWAYS

THE fundamental purpose of any highway improvement is the provision of adequate service for the volume and type of traffic which is using and will use each section of highway, and the guiding economic principle in the determination of the proper improvement for any section of highway is the selection of the type of improvement which will provide maximum traffic service at a minimum total cost, including capital costs, maintenance and repair costs, salvage value, and vehicle operating costs.

The serviceability of a given type of improvement is influenced greatly by soil, subgrade drainage, climatic and other physical conditions; and by design, quality of materials and construction methods; as well as by the volume and type of traffic and intensity of wheel loads. The design and type of surface selected for a given improvement should be that which will most economically serve present and expected traffic under existing soil, subgrade, drainage, climatic and other physical conditions.

To provide a basis for the establishment of a balanced program of highway improvement to meet traffic demands in New Hampshire a traffic classification of the trunk-line highways has been established. In this classification consideration has been given to total present motor vehicle traffic and estimated traffic in 1931 and 1936, total truck traffic, and traffic of large capacity trucks. On the basis of these traffic data the trunk-line highways have been classified in three groups designated as major, medium and minor traffic routes.

Major traffic routes include sections of highway carrying 1,500 or more motor vehicles, medium traffic routes those sections carrying between 500 and 1,500 motor vehicles, and minor traffic routes those sections carrying less than 500 motor vehicles, except in the case of sections carrying an abnormally large or small proportion of total trucks and large capacity trucks. In these cases the classification has been modified to meet these abnormal traffic conditions.

Bituminous macadam surface on Route 10. Note Dartmouth College road markers

The classification has been made on the basis of observed traffic in 1926, and the estimated traffic in 1931 and 1936 is employed to indicate the probable classification in those years.

Sections carrying more than 1,500 vehicles in 1926 are classed as Major 1 sections, sections carrying less than 1,500 vehicles in 1926, but expected to carry over 1,500 vehicles in 1931, are classed as Major 2 sections, and sections carrying less than 1,500 vehicles in 1926 and 1931, but expected to carry more than 1,500 vehicles in 1936 are classed as Major 3 sections. The latter groups, Major 2 and Major 3, are included in the major classification on the theory that proposed improvements on these sections may be expected to carry in excess of 1,500 vehicles during all or a substantial part of the expected life of the improvement.

The Medium 1 classification includes all sections carrying between 500 and 1,500 motor vehicles in 1926, exclusive of the sections included in the Major 2 and Major 3 classifications. The Medium 2 classification includes those sections carrying less than 500 vehicles in 1926 which are expected to carry more than 500 vehicles in 1931. This latter group is included in the medium classification on the theory that proposed improvements on these routes should be constructed to carry in excess of 500 vehicles, since the improvement will be required to carry this volume of traffic during a substantial part of its life period.

The minor classification includes all routes carrying less than 500 vehicles in 1931. The sections of this group which are expected to carry in excess of 500 vehicles by 1936 are classed as Minor 1, and the remaining sections as Minor 2. This differentiation is made principally to indicate the more important of the minor-traffic routes and the routes which are potential traffic routes of some importance. These classes and the traffic limits of each class are summarized in the following tabulation:

Traffic classification	Average daily motor vehicles		
	1926	1931	1936
Major 1.....	1,500 or over	1,500 or over	1,500 or over
Major 2.....	500–1,500	1,500 or over	1,500 or over
Major 3.....	500–1,500	500–1,500	1,500 or over
Medium 1....	500–1,500	500–1,500	500–1,500
Medium 2....	less than 500	500–1,500	500–1,500
Minor 1.....	less than 500	less than 500	500–1,500
Minor 2.....	less than 500	less than 500	less than 500

The traffic classification for each section of the trunk-line system based upon these class limits is shown in Figure 28 and Appendix VI.

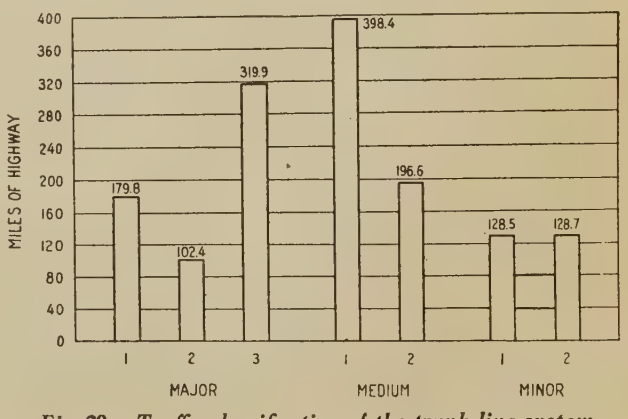
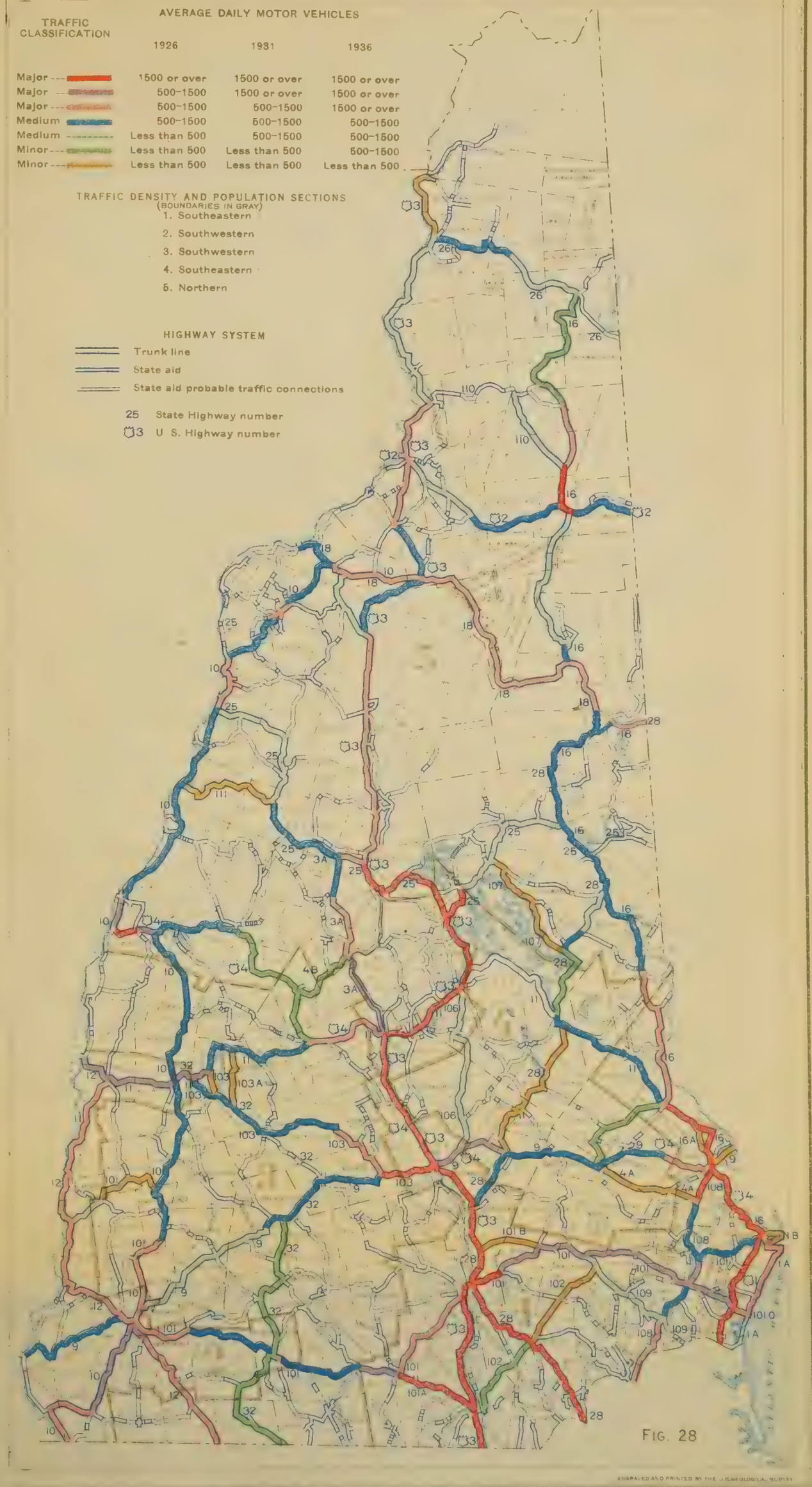


Fig. 29.—Traffic classification of the trunk-line system



TRAFFIC CLASSIFICATION OF THE TRUNK-LINE SYSTEM

The mileage in each class is shown in Table 31 and Figure 29.

The distribution of these classification groups according to the five traffic sections of the State is shown in Table 32 and Figures 30, 31 and 32.

Table 31.—Traffic classification of New Hampshire trunk-line highway system

Traffic classification	Miles	Per cent of total miles
Major 1	179.8	12.4
Major 2	102.4	7.0
Major 3	319.9	22.0
Total major	602.1	41.4
Medium 1	398.4	27.4
Medium 2	196.6	13.5
Total medium	595.0	40.9
Minor 1	128.5	8.8
Minor 2	128.7	8.9
Total minor	257.2	17.7
Total trunk-line highways	1,454.3	100.0

The Major 1 classification includes 179.8 miles, or 12.4 per cent, of the total trunk-line mileage in the State. Of this mileage, 155 miles is located in traffic section 1. Over 40 per cent of the trunk-line highways in this section are in the Major 1 classification.

The Major 2 classification includes 102.4 miles, or 7.0 per cent, of the total and the Major 3 classification 319.9 miles, or 22.0 per cent, of the total. Approximately 600 miles, or 41.4 per cent, of the total trunk-line mileage, is expected to carry more than 1,500 vehicles per day by 1936. This mileage will include approximately seven-tenths of the trunk-line mileage in traffic section 1, over six-tenths in section 2, three-tenths in section 5 and two-tenths in sections 3 and 4.

The Medium 1 group includes 398.4 miles, or 27.4 per cent, of the total trunk-line mileage, and the Medium 2 group 196.6 miles, or 13.5 per cent, of the total.

The total trunk-line mileage carrying more than 500 vehicles per day in 1926 is, therefore, approximately 1,000 miles and the mileage expected to carry more than 500 vehicles per day in 1931 is approximately 1,200 miles. The highways carrying more than 500 vehicles per day in 1926 include approximately 80 per cent of the trunk-line mileage in traffic section 1, 85 per cent in section 2, 65 per cent in section 3, 63 per cent in section 5, and 47 per cent in section 4.

Of the mileage carrying in excess of 500 vehicles in 1926, approximately 600 miles are carrying more than 800 vehicles per day and approximately 400 miles between 500 and 800 vehicles per day. Of the 1,200 miles expected to carry more than 500 vehicles per day in 1931, approximately 175 miles will be carrying between 500 and 800 vehicles, and 1,025 miles over 800 vehicles.

Experience in New Hampshire indicates that when traffic exceeds approximately 500 vehicles per day, under average physical conditions ordinary gravel (without surface treatment) and similar surfaces can not be economically maintained. Above that traffic density the type and design required is largely a function of the volume and type of traffic and the frequency of heavy wheel loads, the choice of types including bituminous treated types for the lower densities and the several pavement types for the greater densities.

If, on the basis of this experience, those sections of the trunk-line system which carried in excess of 500 vehicles per day in 1926 be considered as requiring a type of surface superior to untreated gravel, approximately 1,000 miles, or 68.8 per cent, of the trunk-line system requires such surfaces.

Comparison of this mileage with present improvements superior to gravel indicate the need for an extensive improvement program. On July 1, 1926, 217.8 miles of trunk-line highways were improved with surfaces of concrete, bituminous macadam or modified asphalt, 87.2 miles with waterbound macadam, 801 miles with surface-treated gravel, and 103.2 miles with untreated gravel.

Adequate traffic service requires the improvement of the routes carrying more than 500 vehicles per day with surfaces superior to untreated gravel as soon as possible. The routes carrying

Table 32.—Traffic classification of the New Hampshire trunk-line highway system in the five traffic sections

Traffic classification	Traffic section					Total
	1 Miles	2 Miles	3 Miles	4 Miles	5 Miles	Miles
Major 1	155.0	.....	2.6	.....	22.2	179.8
Major 2	50.3	28.8	10.9	5.3	7.1	102.4
Major 3	57.4	70.8	34.5	18.2	139.0	319.9
Total major	262.7	99.6	48.0	23.5	168.3	602.1
Medium 1	37.0	35.4	99.0	33.6	193.4	398.4
Medium 2	22.5	8.0	20.9	14.0	131.2	196.6
Total medium	59.5	43.4	119.9	47.6	324.6	595.0
Minor 1	14.3	13.6	39.5	19.6	41.5	128.5
Minor 2	34.5	2.3	19.7	29.9	42.3	128.7
Total minor	48.8	15.9	59.2	49.5	83.8	257.2
Total trunk-line system	371.0	158.9	227.1	120.6	576.7	1,454.3
Per cent of mileage of section						
Major 1	41.8	.....	1.1	.....	3.9	12.4
Major 2	13.5	18.1	4.8	4.4	1.2	7.0
Major 3	15.5	44.6	15.2	15.1	24.1	22.0
Total major	70.8	62.7	21.1	19.5	29.2	41.4
Medium 1	10.0	22.3	43.6	27.9	33.5	27.4
Medium 2	6.0	5.0	9.2	11.6	22.8	13.5
Total medium	16.0	27.3	52.8	39.5	56.3	40.9
Minor 1	3.9	8.6	17.4	16.2	7.2	8.8
Minor 2	9.3	1.4	8.7	24.8	7.3	8.9
Total minor	13.2	10.0	26.1	41.0	14.5	17.7
Total trunk-line system	100.0	100.0	100.0	100.0	100.0	100.0
Per cent of total mileage in each class						
Major 1	86.2	.....	1.4	.....	12.4	100.0
Major 2	49.1	28.1	10.7	5.2	6.9	100.0
Major 3	17.9	22.1	10.8	5.7	43.5	100.0
Total major	43.6	16.5	8.0	3.9	28.0	100.0
Medium 1	9.3	8.9	24.9	8.4	48.5	100.0
Medium 2	11.5	4.1	10.6	7.1	66.7	100.0
Total medium	10.0	7.3	20.1	8.0	54.6	100.0
Minor 1	11.1	10.6	30.7	15.3	32.3	100.0
Minor 2	26.8	1.8	15.3	23.2	32.9	100.0
Total minor	19.0	6.2	23.0	19.2	32.6	100.0
Total trunk-line system	25.5	10.9	15.6	8.3	39.7	100.0

the greater density of traffic, or over 800 vehicles per day, should be given first consideration in the improvement program. All routes carrying more than 500 vehicles in 1926 will, however, carry more than 800 vehicles by 1931, and all these routes, approximately 1,000 miles, should, therefore, be improved with surfaces superior to gravel.

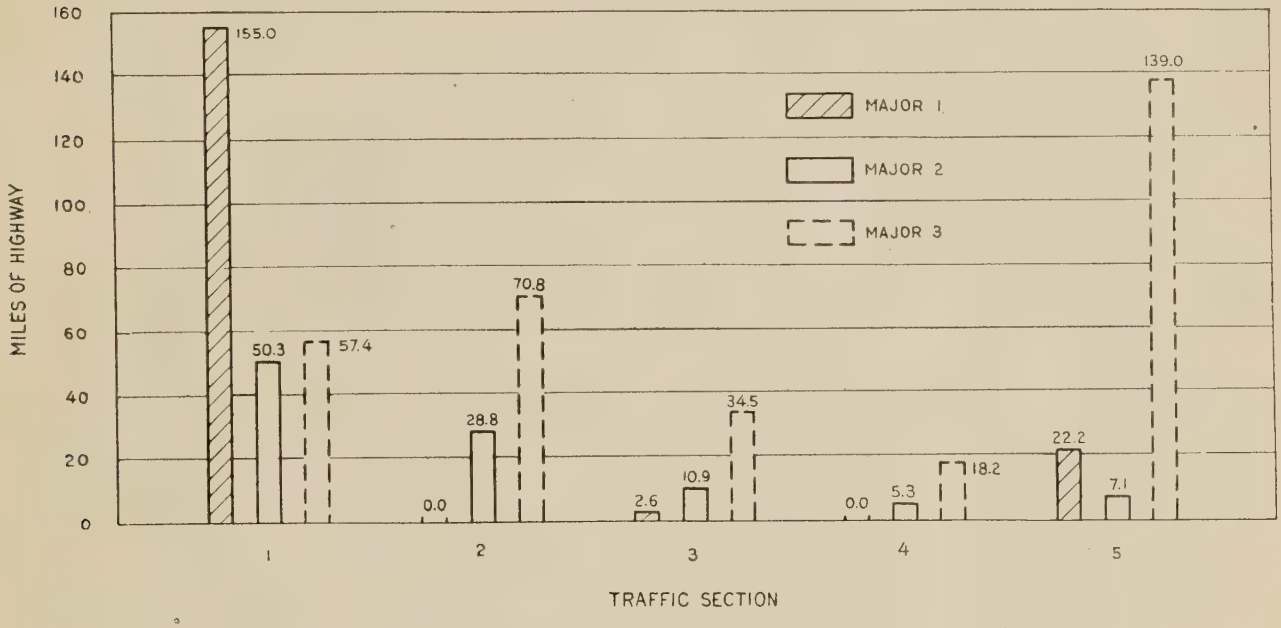


Fig. 30.—*Mileage of trunk-line highway classed as major in each of the five traffic sections*

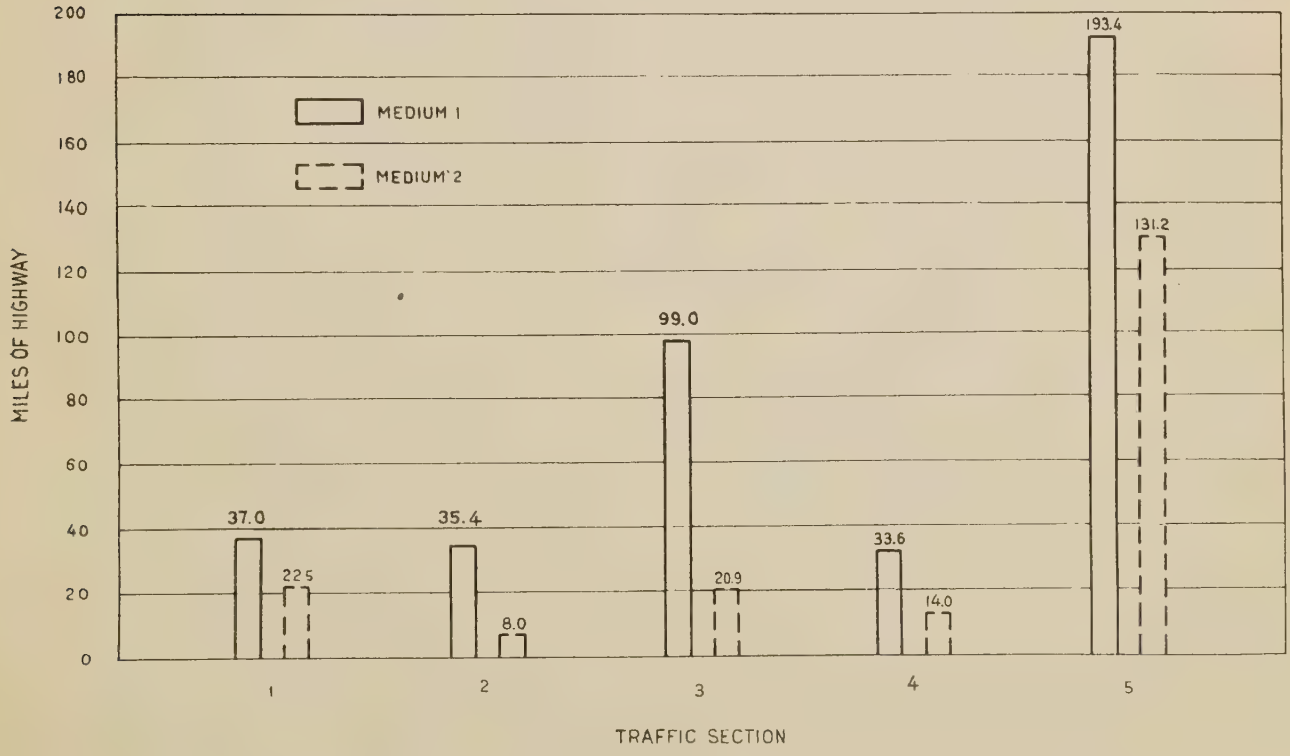


Fig. 31.—*Mileage of trunk-line highway classed as medium in each of the five traffic sections.*

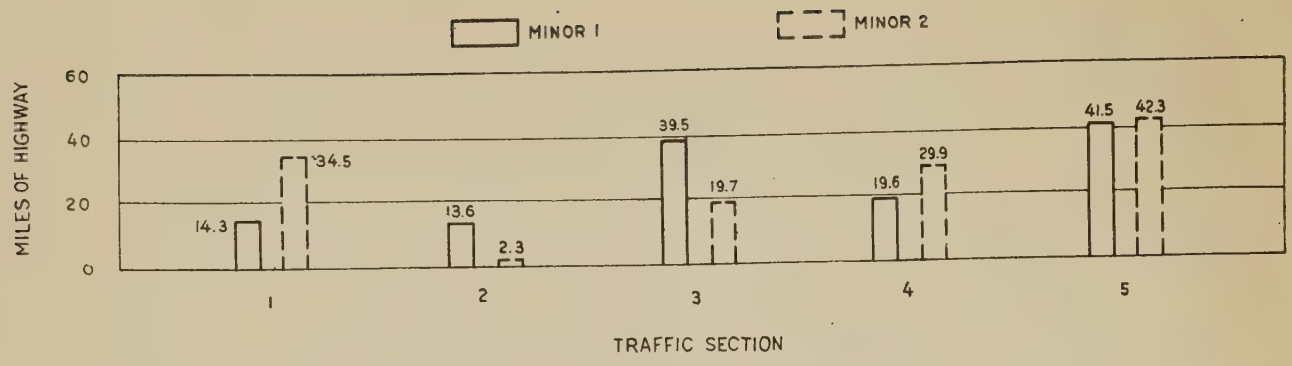


Fig. 32.—Mileage of trunk-line highway classed as minor in each of the five traffic sections

THE PLAN OF HIGHWAY IMPROVEMENT

THE proposed plan of improvement for the trunk-line highway system, based on the mileage and condition of present improvements and upon present and expected future traffic, shows that 1,010.8 miles of new construction and reconstruction will be necessary to meet traffic requirements during the ten-year period from January 1, 1927, to December 31, 1936.[10]

A classification of this mileage by classes of improvement and urgency of need for improvement is shown in Table 33.

The location of projects on the improvement program, together with present improvements on the trunk-line system, are shown in Figure 33.

The new construction program of 864.5 miles includes 719.5 miles of surfaces superior to untreated gravel and 145.0 miles of gravel or similar surfaces. Of the proposed new construction program of surfaces superior to gravel, 587.5 miles are now improved with gravel surfaces, but will require improvement with superior types to adequately serve present and expected traffic; 132.0 miles are at present unimproved, or sections on which present improvements cannot be salvaged and which require surfaces superior to gravel. This latter group require complete new construction. In the former group present gravel surfaces will in many cases provide a satisfactory base for higher-type surfaces.

The program of new construction of gravel or similar surfaces includes unimproved gaps on the trunk-line system on routes carrying less than 500 vehicles per day. These gaps hamper the free movement of traffic and decrease considerably the highway service value of the improved sections.

The reconstruction program includes sections now improved with concrete, modified asphalt or macadam which require reconstruction within the period of the improvement program.

The ten-year program has been divided into two five-year programs on the basis of the urgency of the need for improvement. The program for new construction of surfaces superior to gravel and for reconstruction during the period 1927 to 1931, inclusive, includes all routes requir-

Table 33.—Proposed ten-year program of new construction and reconstruction

Class of improvement	1927 to 1931, inclusive	1932 to 1936, inclusive	Total improvement
	Miles	Miles	Miles
New construction:			
Surfaces superior to untreated gravel	380.1	339.4	719.5
Gravel or similar surfaces	76.2	68.8	145.0
Total new construction	456.3	408.2	864.5
Reconstruction	122.2	24.1	146.3
Grand total	578.5	432.3	1,010.8

[10] The proposed plan for construction of surfaces superior to gravel does not include 196.6 miles now carrying less than 500 vehicles which are expected to carry over 500 vehicles by 1931, or 128.5 miles now carrying less than 500 vehicles which are expected to carry more than 500 vehicles by 1936. These sections are at present improved with gravel surfaces or are included in the immediate gravel construction program. It is believed that regular maintenance and surface treatment when required will provide adequate service on these routes until 1936.

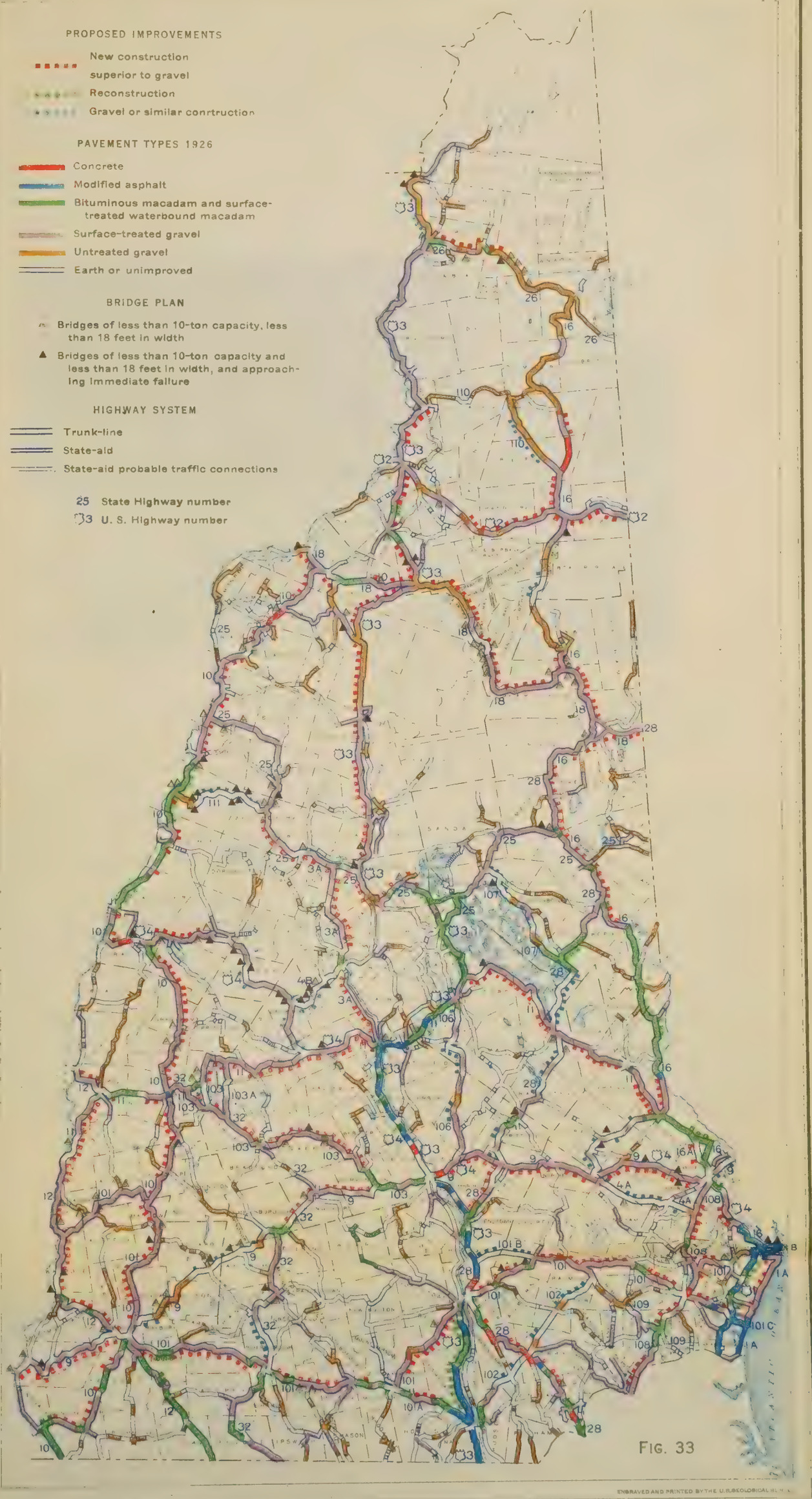


FIG. 33

ENGRAVED AND PRINTED BY THE U.S. GEOLOGICAL SURVEY

PROPOSED PLAN OF IMPROVEMENTS ON THE TRUNK-LINE SYSTEM

ing improvement which are carrying more than 800 vehicles per day. The program for 1932 to 1936, inclusive, includes routes now carrying between 500 and 800 vehicles per day.

The program for new construction of gravel or similar surfaces during the period 1927 to 1931, inclusive, includes unimproved sections on the trunk-line system carrying less than 500 vehicles per day which are expected to carry more than 500 by 1936, and the program for the period 1932 to 1936, inclusive, includes those sections expected to carry less than 500 vehicles per day in 1936.

The new construction and reconstruction program includes 69.5 per cent of the trunk-line mileage, of which 59.4 per cent will be new construction and 10.1 per cent reconstruction. Of the new construction, 193.6 miles are at present unimproved.

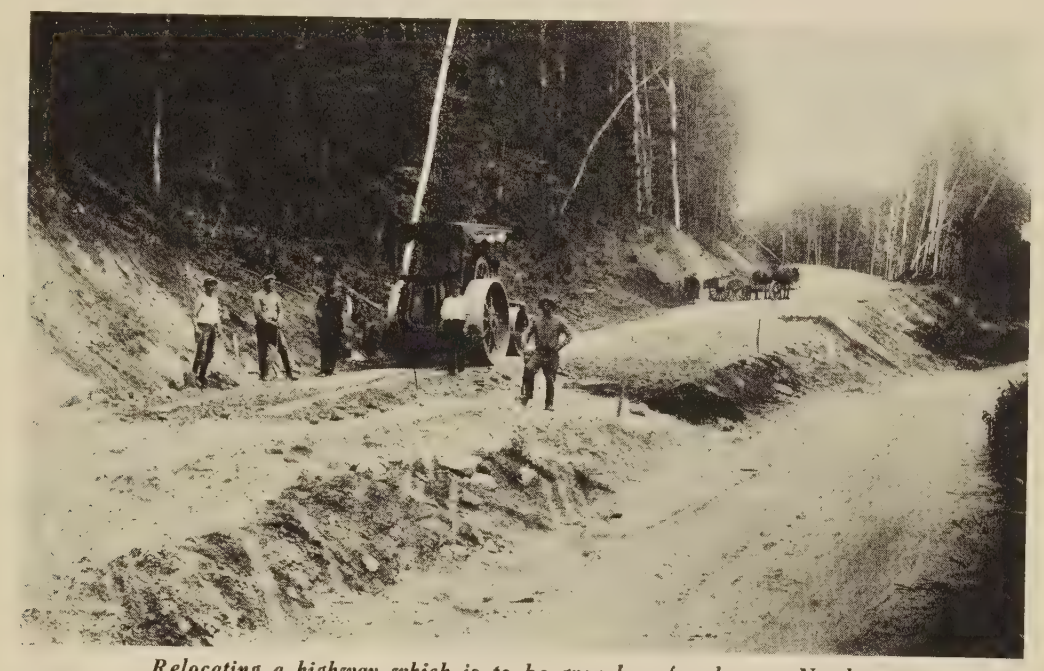
Of the trunk-line highways, 443.5 miles, or 30.5 per cent of the total, are at present improved with surfaces adequate for present and expected traffic during the ten-year period.

The improvement plan has been limited to the trunk-line highway system, since less than 60 miles of other rural highways carry more than 500 vehicles per day.

The completion of the improvement of the trunk-line system with surfaces adequate for present and expected future traffic constitutes the major and immediate highway problem of the State. The mileage of proposed new construction and reconstruction in the five traffic sections of the State is shown in Table 34.

The improvement plan is distributed throughout the entire State, including from 62.8 per cent of the trunk-line mileage in traffic section 5 to 80.2 per cent in traffic section 2.

The new construction program is relatively smallest in traffic section 1 and relatively greatest in traffic section 4, reflecting the greater proportion of unimproved sections in the latter area at the present time.



Relocating a highway which is to be gravel surfaced, near Newburg

Approximately two-thirds of the entire reconstruction program is located in traffic section 1, in which 26.5 per cent of the trunk-line mileage must be reconstructed. This section also requires the greatest amount of major-type improvements. Reconstruction and new construction of surfaces superior to gravel in the remaining sections will consist principally of medium-type improvements.

The production of adequate structures on the trunk-line system is an essential part of the development program. Figure 33 shows the location of 56 bridges on the trunk-line system which are approaching failure and of 97 other bridges which are of less than 10-ton capacity and less

than 18 feet in width. A balanced program of highway development which will provide adequate service to the traffic using the highways of the State must include the replacement or reconstruction of these bridges.

A third problem of highway development involves the elimination of dangerous railroad grade crossings. A considerable number of these crossings can be eliminated by relocating short sections of highway; others will require the separation of grades. Railroad grade crossings are distinct traffic hazards and decrease the traffic capacity of highways. The elimination of such crossings must be coordinated with the development of adequate highway surfaces and bridges.

The past development of the New Hampshire trunk-line highway system during the period of rapid expansion of the trunk-line mileage as designated by the legislature, and the early period of traffic growth, has been under the conservative policy of "stage construction" as best suited to provide highway surfaces adequate for the then relatively small volume of traffic. The relatively large mileage in the total plan of improvement and the considerable mileage to be reconstructed is the natural result of the "stage construction" method of development when insufficient revenue is provided for its improvement.

New Hampshire has reached the period in its highway development that requires a change from the policy of gradual development of the entire trunk-line system to one of improvement of the principal traffic routes with surfaces superior to gravel.

It is believed that the proposed plan of highway improvement will provide satisfactory service for the increasing volume of traffic using New Hampshire highways and is at the same time commensurate with the dictates of financial economy which must always govern the expenditure of public funds.

It is also believed that an improvement program more limited in scope than the plan suggested will result in increased total highway expenditures, due to higher maintenance costs resulting from the postponement of permanent improvements, as well as inadequate highway service and increased motor vehicle operating costs.

The execution of this plan will require highway expenditures considerably in excess of present revenues available for improvement of the trunk-line system, but will result in more advantageous utilization of these funds by permitting a larger proportion to be expended for permanent improvements.

For the most economical accomplishment of the proposed improvement plan, it is recommended that no additional mileage be added to the trunk-line system and that the present trunk-line system be placed under the complete jurisdiction of the State highway department, all improvements to be constructed and maintained by the department and financed with State and Federal funds. It is also recommended that the secondary or connecting State-aid roads be established by the legislature and that the construction and maintenance of this secondary system be financed jointly by the State and towns.

Table 34.—Proposed new construction and reconstruction program in the five traffic sections

Section	Mileage of trunk-line highways	Proposed improvement program		New construction program		Reconstruction program	
		Miles	Per cent	Miles	Per cent	Miles	Per cent
1.....	371.0	273.0	73.6	174.8	47.1	98.2	26.5
2.....	158.9	127.5	80.2	112.5	70.8	15.0	9.4
3.....	227.1	155.8	68.6	147.7	65.0	8.1	3.6
4.....	120.6	92.2	76.4	92.2	76.4	.....	.....
5.....	576.7	362.3	62.8	337.3	58.5	25.0	4.3
Total.....	1,454.3	1,010.8	69.5	864.5	59.4	146.3	10.1

APPENDIX I

MOTOR TRUCK TRANSPORTATION OF COMMODITIES

MANUFACTURED products constitute the principal class of commodities hauled by motor trucks on the main trucking routes of the State. Of the loaded trucks recorded, 58.6 per cent were engaged in the transportation of manufactured products and these trucks hauled 52.1 per cent of the total net tonnage transported, with an average length of haul of 35 miles.

A comparison of the several classes of commodities with respect to the number of trucks involved, tonnage of commodities transported and average length of haul is shown in Table 1.

Table 1.—Classes of commodities transported over the principal highways of the State[1]

Commodity class	Loaded trucks	Commodity tonnage	Average length of haul
	Per cent	*Per cent*	*Miles*
Products of manufactures	58.6	52.1	35
Products of forests	12.7	15.4	18
Products of agriculture	9.3	9.0	38
Products of animals	7.6	5.6	34
Products of mines	4.6	11.6	10
Miscellaneous	7.2	6.3	40
Total	100.0	100.0	32

[1] Based upon 3,906 commodity loads.

Products of manufactures, the most important class, includes a great number of different commodities. Among the most important are bread and bakery goods, gasoline, mixed groceries, and used household goods. These four items constituted the cargo on 38 per cent of the trucks hauling products of manufactures.

Products of forests are the second most important class. Twelve and seven-tenths per cent of the loaded trucks observed were engaged in the movement of this class of commodities. Cord and kindling wood, rough lumber, and dressed lumber were the principal commodities in this class and accounted for 94 per cent of the trucks transporting products of forests. The average length of haul for this class of commodities was 18 miles.

Products of agriculture make up 9.0 per cent of the total tonnage transported by motor trucks, with fresh fruits and vegetables as the principal commodities.

Products of animals were hauled by 7.6 per cent of the loaded trucks. Milk, meat and packing house products were the principal loads recorded in this class, amounting to 51 per cent of the number of trucks observed.

Products of mines, although hauled by only 4.6 per cent of the loaded trucks, constitute 11.6 per cent of the total commodity tonnage. Trucks engaged in this movement are, for the most part, large-capacity trucks hauling heavy loads. They are engaged principally in the movement of gravel, sand and stone to construction jobs, with an average haul of 10 miles. On any particular route the movement varies with fluctuations in the construction industry such as the construction of buildings, roads and bridges. A reduction in the capacity of trucks hauling materials to construction jobs would, except on a small mileage of heavy-traffic routes, largely eliminate the large-capacity and heavy gross loads from the highways.

The miscellaneous class of commodities shown in Table 1 and comprising 7.2 per cent of the loaded trucks consists mainly of general freight

Table 2.—Principal commodities transported by motor truck over New Hampshire highways[1]

Commodity	Loaded trucks	Commodity tonnage	Average length of haul
	Per cent	*Per cent*	*Miles*
Bread and bakery goods	6.6	1.8	26
Gasoline	5.9	8.8	16
Mixed groceries	5.6	9.3	39
Fresh fruits	5.0	6.4	50
Lumber, rough	5.0	7.0	18
Furniture (used)	4.3	3.2	84
Wood, cord, and kindling	4.1	4.3	14
Gravel, sand, and stone	3.6	9.9	9
General freight	3.5	4.7	40
Lumber, finished	2.8	3.2	22
Bottles	2.8	1.7	19
Fresh vegetables	2.2	1.5	27
Miscellaneous	48.6	38.2	33
Total	100.0	100.0	32

[1] Based upon 3,906 commodity loads.

and laundry. These two items are hauled by 66 per cent of the loaded trucks in this class.

A summary of the principal individual commodities transported by motor truck is shown in Table 2.

Considering the number of loaded trucks and the tonnage of each commodity, groceries, gasoline, gravel, sand and stone, lumber, and fresh fruits are the most important commodities transported on New Hampshire highways.

Wholesale establishments and manufacturing companies are the principal types of origin and retail establishments the principal types of destination of loaded trucks using the rural highways. As shown in Table 3, 55.8 per cent of the loaded trucks originate at manufacturing companies and wholesale and retail establishments while 53.3 per cent are destined to them.

Consumers, including residences, institutions, hotels and restaurants, are the origin of 8.3 per cent of the loads and the destination of 18.3 per cent. Approximately one-half of the loads originating with consumers are loads of used furniture and household goods being moved from one place of residence to another.

Table 3.—Type of origin and destination of loaded trucks[1]

Type of origin or destination	Loaded trucks from types of origin	Loaded trucks to types of destination
	Per cent	*Per cent*
Wholesale establishments	20.9	6.5
Manufacturing companies	20.8	12.6
Retail establishments	14.1	34.2
Consumers	8.3	18.3
Original sources of supply	7.5	0.1
Farms	5.5	5.4
Terminals	4.5	2.3
Storage	3.8	2.2
Construction and repair jobs	1.7	11.9
Miscellaneous	12.9	6.5
Total	100.0	100.0

[1] Based upon 3,906 loaded trucks.

Original sources of supply, which include mines, quarries, pits and forests, are the origin of 7.5 per cent and the destination of 0.1 per cent of the loaded trucks.

Miscellaneous types account for the origin of 12.9 per cent of the trucks and the destination of 6.5 per cent as shown in Table 3. These include such items as garages, dumps, supply yards and the movement of trucks picking up and delivering freight at a series of two or more types of origin and destination.

APPENDIX II

Motor Vehicle Traffic at New Hampshire Traffic Survey Stations

(Average Daily,[1] 1926, Normal Maximum, 1926, and Average Daily, 1931)

Station[2]	Direction[3]	Route number[4]	Average daily traffic in 1926			Maximum daily traffic, total vehicles	Average daily traffic in 1931, total vehicles
			Trucks	Passenger cars	Total vehicles		
1....	N	U. S. 1	208	5,792	6,000	10,460	9,370
	S	U. S. 1	182	5,067	5,249	9,150	8,190
	W	Mass. 110	27	788	815	1,420	1,270
2....	N	U. S. 1	138	5,556	5,694	10,020	8,890
	S	U. S. 1	138	5,553	5,691	10,010	8,880
	E	T. R.	3	51	54	90	80
	W	T. R.	3	51	54	90	80
3....	N	1 A	94	2,895	2,989	5,230	4,670
	S	T. R.	86	1,194	1,280	2,170	1,910
	E	1 A	22	1,807	1,829	3,250	2,860
4....	N	T. R.	11	48	59	90	80
	E	U. S. 2	26	466	492	840	730
	W	U. S. 2	18	453	471	820	700
5....	N	16	99	1,339	1,438	2,440	2,240
	S	U. S. 2	101	1,508	1,609	2,740	2,510
	W	U. S. 2	42	614	656	1,120	980
6....	N	S. A.	6	70	76	130	110
	E	U. S. 2	25	484	509	880	760
	W	U. S. 2	29	528	557	960	830
7....	N	U. S. 3	317	3,871	4,188	7,050	6,540
	S	U. S. 3	317	3,871	4,188	7,050	6,540
	W	T. R.	*	*	.....	.....	.....
8....	N	U. S. 3	216	3,177	3,393	5,770	5,300
	S	U. S. 3	216	3,177	3,393	5,770	5,300
9....	N	U. S. 3	310	3,536	3,846	6,450	6,000
	S	U. S. 3	303	3,484	3,787	6,350	5,910
	W	T. R.	8	100	108	180	160
10....	N	U. S. 3	213	3,362	3,575	6,100	5,580
	S	U. S. 3	226	3,416	3,642	6,200	5,690
	E	101 B	16	61	77	110	110
11....	N	U. S. 3	244	4,116	4,360	7,470	6,810
	S	U. S. 3	244	4,116	4,360	7,470	6,810
12....	N	U. S. 3	218	3,986	4,204	7,220	6,560
	S	U. S. 3	218	3,986	4,204	7,220	6,560
13....	N	U. S. 3	125	2,346	2,471	4,250	3,860
	S	U. S. 3	140	2,539	2,679	4,600	4,180
	W	S. A.	20	214	234	390	350
14....	N	T. R.	15	98	113	180	180
	E	U. S. 3	136	2,204	2,340	4,000	3,650
	W	U. S. 3	143	2,253	2,396	4,090	3,740
15....	N	U. S. 3	109	1,891	2,000	3,430	3,120
	S	U. S. 3	118	1,980	2,098	3,590	3,270
	W	S. A.	18	128	146	240	230
16....	N	U. S. 3	84	2,175	2,259	3,930	3,530
	S	U. S. 3	108	2,467	2,575	4,460	4,020
	E	11	27	714	741	1,290	1,100
17....	N	U. S. 3	38	962	1,000	1,740	1,560
	S	U. S. 3	39	948	987	1,710	1,540
	E	S. A.	12	198	210	360	310
18....	N	U. S. 3	52	1,081	1,133	1,960	1,770
	S	U. S. 3	51	1,049	1,100	1,900	1,720
	W	T. R.	1	45	46	80	70
19....	N	U. S. 3	22	1,414	1,436	2,550	2,140
	S	U. S. 3	26	1,425	1,451	2,570	2,160
19....	E	S. A.	15	132	147	240	220
20....	N	105	10	462	472	830	700
	S	U. S. 3	9	1,079	1,088	1,940	1,620
	E	U. S. 3	5	688	693	1,240	1,030
21....	N	S. A.	16	314	330	570	490
	S	U. S. 3	20	752	772	1,360	1,150
	W	U. S. 3	17	522	539	940	800
22....	N	U. S. 3	21	808	829	1,460	1,230
	S	U. S. 3	18	803	821	1,450	1,220
	W	T. R.	3	8	11	20	20
23....	N	U. S. 3	38	832	870	1,510	1,300
	S	U. S. 3	40	831	871	1,500	1,300
	E	T. R.	2	13	15	20	20
24....	N	U. S. 3	57	851	908	1,550	1,350
	S	S. A.	8	45	53	80	80
	E	S. A.	12	141	153	260	230
	W	U. S. 3	43	758	801	1,370	1,190
25....	N	U. S. 3	35	443	478	810	660
	S	U. S. 3	34	489	523	890	730
	W	T. R.	23	187	210	340	310
26....	N	3 A	113	1,378	1,491	2,510	2,220
	S	3 A	115	1,483	1,598	2,700	2,389
	W	4 B	18	307	325	560	480
27....	S	3 A	8	681	689	1,220	1,030
	E	25	18	900	918	1,620	1,370
	W	25	16	551	567	990	790
28....	S	T. R.	14	201	215	370	340
	E	U. S. 4	75	1,384	1,459	2,510	2,280
	W	U. S. 4	95	1,514	1,609	2,750	2,510
29....	S	10	21	524	545	950	810
	E	U. S. 4	78	870	948	1,590	1,410
	W	U. S. 4	94	1,260	1,354	2,290	2,110
30....	N	U. S. 4	17	338	355	610	530
	S	U. S. 4	17	338	355	610	530
31....	N	U. S. 4	16	249	265	450	390
	E	U. S. 4	33	692	725	1,250	1,080
	W	11	29	526	555	950	830
32....	E	U. S. 4	106	1,158	1,264	2,110	1,970
	W	U. S. 4	106	1,158	1,264	2,110	1,970
33....	N	106	51	292	343	540	480
	E	U. S. 4	59	949	1,008	1,720	1,570
	W	U. S. 4	109	1,234	1,343	2,250	2,100
34....	S	4 A	24	178	202	330	300
	E	U. S. 4	35	436	471	790	700
	W	U. S. 4	36	582	618	1,060	920
35....	S	T. R.	29	207	236	380	370
	E	U. S. 4	83	957	1,040	1,740	1,620
	W	U. S. 4	56	818	874	1,490	1,360
36....	N	U. S. 4	115	1,610	1,725	2,930	2,690
	S	U. S. 4	113	1,454	1,567	2,650	2,450
	W	S. A.	4	184	188	330	280
37....	N	9	28	540	568	980	850
	S	T. R.	*	7	7	10	10
	E	T. R.	5	17	22	30	30

[1] The average daily traffic reported is the average for the period July 16 to Oct. 15. [2] For location of stations see Figure 8. [3] Direction of route from station.
[4] All numbered routes are trunk-line highways. The United States routes are designated by the initials U. S., State-aid routes by S. A., and town roads by T. R.
* Less than one vehicle per day.

Motor Vehicle Traffic at New Hampshire Traffic Survey Stations—Continued

Station[2]	Direction[3]	Route number[4]	Average daily traffic in 1926			Maximum daily traffic, total vehicles	Average daily traffic in 1931, total vehicles
			Trucks	Passenger cars	Total vehicles		
37....	W	9	36	609	645	1,100	960
38....	N	12	66	819	885	1,490	1,380
	E	9 & 12	138	1,379	1,517	2,520	2,370
	W	9	72	574	646	1,050	960
39....	N	10	88	741	829	1,360	1,230
	S	9 & 10	128	1,133	1,261	2,070	1,880
	E	9	41	422	463	770	690
40....	N	S. A.	26	359	385	650	570
	S	T. R.	5	95	100	170	150
	E	9	40	673	713	1,220	1,060
	W	9	15	316	331	570	490
41....	N	9 & 32	37	534	571	970	850
	S	9 & 32	48	573	621	1,040	920
	W	T. R.	12	54	66	100	100
42....	E	9 & 103	218	2,208	2,426	4,030	3,790
	W	9 & 103	218	2,208	2,426	4,030	3,790
43....	N	10	36	918	954	1,660	1,420
	S	10	36	918	954	1,660	1,420
44....	E	10	52	776	828	1,410	1,230
	W	10	52	776	828	1,410	1,230
45....	N	10	78	1,346	1,424	2,440	2,120
	S	10	75	1,351	1,426	2,450	2,120
	W	T. R.	7	28	35	50	50
46....	N	10	18	541	559	980	830
	S	10 & 101	21	594	615	1,070	920
	W	101	8	127	135	230	190
47....	N	10	36	639	675	1,160	1,010
	S	10	51	758	809	1,380	1,200
	W	T. R.	17	126	143	230	210
48....	N	10	70	1,041	1,111	1,890	1,650
	S	10	70	1,041	1,111	1,890	1,650
49....	N	10	37	646	683	1,170	1,020
	S	10	45	670	715	1,220	1,060
	E	T. R.	11	30	41	60	60
50....	N	10	27	623	650	1,130	970
	S	10	21	562	583	1,020	870
	E	111	10	126	136	230	190
51....	N	10 & 25	33	834	867	1,510	1,290
	S	10	27	564	591	1,020	880
	E	25	17	401	418	730	580
52....	N	10	25	704	729	1,270	1,090
	S	S. A.	17	109	126	200	180
	W	10	32	713	745	1,290	1,110
53....	N	10	44	609	653	1,110	970
	S	10	64	866	930	1,570	1,380
	E	S. A.	21	320	341	580	510
54....	S	105	19	458	477	830	710
	E	10 & 18	47	963	1,010	1,740	1,500
	W	10 & 18	63	1,291	1,354	2,340	2,020
55....	N	11 & 12	137	1,532	1,669	2,790	2,490
	S	11 & 12	58	804	862	1,460	1,280
	W	T. R.	116	726	842	1,340	1,310
56....	S	S. A.	19	195	214	360	320
	E	11	76	1,314	1,390	2,380	2,070
	W	11	60	1,129	1,189	2,050	1,770
57....	N	11	77	1,217	1,294	2,210	1,930
	S	32 & 103	53	614	667	1,120	990
	W	11 & 32	53	1,316	1,369	2,380	2,040
58....	S	103 A	15	108	123	200	180
	E	11	25	583	608	1,050	910
	W	11	39	690	729	1,250	1,090
59....	N	11 & 28	32	801	833	1,450	1,160
	S	28	8	230	238	420	330
	E	11	28	709	737	1,280	1,030
60....	N	11	113	1,256	1,369	2,290	1,900
	S	T. R.	26	266	292	490	460
	E	11 & 104	175	1,723	1,898	3,150	2,830
	W	104	52	326	378	600	530
61....	N	12	36	762	798	1,380	1,190
	S	12	37	766	803	1,390	1,200
	E	T. R.	2	4	6	10	10
62....	N	12	112	1,306	1,418	2,380	2,110
	S	12	61	925	986	1,680	1,470
	W	T. R.	58	488	546	890	810
63....	N	12 & 101	122	1,627	1,749	2,960	2,600
	S	12	72	1,280	1,352	2,320	2,110
	E	101	56	357	413	660	570
64....	N	T. R.	19	284	303	520	470
	S	12	52	1,107	1,159	2,000	1,730
	W	12	35	760	795	1,380	1,180
65....	N	16	122	1,948	2,070	3,540	3,230
	S	16 A	20	108	128	200	190
	E	16	103	1,857	1,960	3,370	3,060
	W	T. R.	1	11	12	20	20
66....	N	16	46	874	920	1,580	1,370
	S	16	48	857	905	1,550	1,350
	E	S. A.	24	218	242	400	360
67....	N	16	15	607	622	1,090	930
	S	16	16	604	620	1,090	920
	E	T. R.	2	18	20	30	30
	W	T. R.	*	1	1	.....	.....
68....	N	16 & 25	44	736	780	1,340	1,160
	S	16 & 28	39	780	819	1,410	1,220
	E	S. A.	36	316	352	580	520
69....	N	16 & 28	19	881	900	1,590	1,340
	S	16 & 28	15	814	829	1,470	1,230
	E	T. R.	3	101	104	180	150
70....	N	16	25	870	895	1,570	1,330
	E	16	38	1,347	1,385	2,430	2,060
	W	18	33	934	967	1,690	1,440
71....	N	16	23	505	528	910	730
	S	16	23	482	505	870	700
	W	T. R.	1	67	68	120	90
72....	N	16	42	614	656	1,120	910
	S	16	49	690	739	1,250	1,030
	E	T. R.	4	103	107	190	150
	W	T. R.	12	97	109	180	150
73....	S	16	17	362	379	660	530
	E	S. A.	20	295	315	540	440
	W	26	13	430	443	780	620
74....	N	T. R.	2	8	10	10	10
	E	18	34	646	680	1,170	1,010
	W	18	32	651	683	1,180	1,020
75....	E	18	20	1,202	1,222	2,160	1,820
	W	18	20	1,202	1,222	2,160	1,820
76....	N	25	21	495	516	900	720
	S	25	23	549	572	990	800
	W	111	11	85	96	160	130
77....	N	T. R.	2	23	25	40	40
	S	25	98	938	1,036	1,710	1,620
	E	25	102	918	1,020	1,680	1,590
78....	N	25	10	500	510	900	710
	S	25	17	531	548	960	760
	E	107	11	234	245	420	340
79....	E	26	66	574	640	1,050	950
	W	26	66	574	640	1,050	950
80....	N	28	142	2,161	2,303	3,920	3,590
	S	28	141	2,166	2,307	3,930	3,600

Station [2]	Direction [3]	Route number [4]	Average daily traffic in 1926			Maximum daily traffic, total vehicles	Average daily traffic in 1931, total vehicles
			Trucks	Passenger cars	Total vehicles		
80....	E	T. R.	5	51	56	90	90
	W	T. R.	12	54	66	100	100
81....	N	28	71	1,897	1,968	3,430	3,070
	S	T. R.	4	60	64	110	100
	E	28	72	1,862	1,934	3,370	3,020
	W	T. R.	4	47	51	90	80
82....	N	28	135	1,754	1,889	3,190	2,950
	S	S. A.	17	185	202	340	300
	E	28	109	1,607	1,716	2,920	2,680
83....	N	28	41	525	566	960	840
	S	28	40	517	557	940	830
	W	T. R.	2	28	30	50	40
84....	N	28	44	215	259	400	360
	S	28	44	215	259	400	360
85....	N	28	15	308	323	560	480
	S	T. R.	3	68	71	120	110
	W	28	14	248	262	450	390
86....	N	28	16	444	460	800	680
	S	28	28	610	638	1,100	950
	E	S. A.	14	362	376	650	560
	W	T. R.	1	14	15	30	20
87....	N	32	20	395	415	720	620
	S	32	20	393	413	710	610
	E	T. R.	*	4	4	10	10
88....	N	32	19	263	282	480	390
	S	32	35	476	511	870	710
	E	T. R.	17	247	264	450	390
89....	N	32	24	265	289	480	400
	S	32	49	492	541	900	750
	W	S. A.	29	231	260	420	390
90....	S	32	22	317	339	580	500
	E	103	28	570	598	1,030	890
	W	32 & 103	50	882	932	1,600	1,390
91....	N	S. A.	25	273	298	500	440
	E	101	54	762	816	1,390	1,220
	W	101	75	995	1,070	1,810	1,590
92....	N	T. R.	4	53	57	100	80
	S	T. R.	13	103	116	190	170
	E	101	36	640	676	1,160	1,010
	W	101	46	711	757	1,290	1,130
93....	E	101	91	1,243	1,334	2,260	1,990
	W	101	91	1,243	1,334	2,260	1,990
94....	N	101	75	724	799	1,320	1,190
	S	101	84	754	838	1,380	1,250
	E	T. R.	16	64	80	120	120
95....	N	T. R.	2	17	19	30	30
	S	S. A.	36	396	432	720	640
	E	101	142	1,239	1,381	2,270	2,160
	W	101	168	1,573	1,741	2,880	2,720
96....	N	T. R.	1	4	5	10	10
	E	101	55	992	1,047	1,800	1,630
	W	101	54	989	1,043	1,790	1,630
97....	N	108	47	569	616	1,040	920
	S	101 & 108	72	995	1,067	1,810	1,590
	E	101	51	696	747	1,270	1,110
98....	N	T. R.	1	46	47	80	70
	S	T. R.	*	7	7	10	10
	E	101 A	132	1,450	1,582	2,640	2,470
	W	101 A	132	1,424	1,556	2,600	2,430
99....	S	S. A.	24	273	297	500	460
	E	101 C	77	1,101	1,178	2,000	1,840
	W	101 C	87	1,369	1,456	2,490	2,270
100....	S	T. R.	2	5	7	10	10
	E	102	34	284	318	520	470
100....	W	102	33	282	315	520	470
101....	N	109	32	395	427	720	590
	E	109	28	326	354	590	490
	W	102	5	76	81	140	120
102....	N	103	61	817	878	1,490	1,310
	S	103	61	817	878	1,490	1,310
103....	N	106	49	467	516	850	720
	S	106	20	300	320	540	450
	E	T. R.	33	218	251	400	370
104....	N	108	84	1,160	1,244	2,110	1,850
	S	108	84	1,160	1,244	2,110	1,850
105....	N	108	64	614	678	1,120	1,010
	S	108	42	455	497	830	740
	E	S. A.	23	164	187	300	280
106....	N	108	95	1,675	1,770	3,040	2,760
	S	108	91	1,628	1,719	2,950	2,680
	E	T. R.	3	39	42	70	70
	W	T. R.	1	33	34	60	50
107....	E	110	81	348	429	650	600
	W	110	81	348	429	650	600
108....	N	1 A	65	2,263	2,328	4,080	3,630
	S	1 A	67	2,207	2,274	3,980	3,550
	W	S. A.	18	292	310	530	480
109....	N	3 A	60	1,049	1,109	1,900	1,650
	S	3 A	60	1,049	1,109	1,900	1,650
110....	N	T. R.	18	827	845	1,490	1,260
	E	18 & 28	33	980	1,013	1,770	1,510
	W	28	19	387	406	700	600
111....	N	S. A.	10	164	174	300	240
	S	S. A.	11	194	205	350	290
	W	T. R.	2	43	45	80	60
112....	N	S. A.	20	151	171	280	240
	S	S. A.	20	151	171	280	240
113....	N	T. R.	12	91	103	170	140
	S	T. R.	9	71	80	130	110
	E	T. R.	4	40	44	70	60
	W	T. R.	7	65	72	120	100
	NW	T. R.	5	44	49	80	70
114....	N	S. A.	30	214	244	390	340
	S	S. A.	20	100	120	190	170
	E	S. A.	24	214	238	390	330
115....	N	T. R.	5	55	60	100	80
	E	S. A.	10	127	137	230	190
	W	T. R.	6	75	81	140	110
116....	N	T. R.	1	13	14	20	20
	S	T. R.	1	18	19	30	30
	E	T. R.	3	38	41	70	60
	W	S. A.	3	39	42	70	60
117....	N	S. A.	15	114	129	210	180
	E	S. A.	14	82	96	150	130
	W	T. R.	4	50	54	90	80
118....	N	S. A.	6	28	34	50	50
	S	S. A.	15	41	56	80	80
	E	S. A.	11	20	31	40	40
	W	S. A.	1	5	6	10	10
119....	N	S. A.	12	81	93	150	140
	S	S. A.	15	81	96	150	140
	E	T. R.	1	4	5	10	10
120....	N	S. A.	9	379	388	680	580
	S	T. R.	7	161	168	290	250
	W	T. R.	5	253	258	460	380
121....	N	T. R.	17	134	151	250	210
	S	T. R.	20	276	296	500	410
	E	T. R.	9	172	181	310	250

Motor Vehicle Traffic at New Hampshire Traffic Survey Stations—Continued

Station[2]	Direction[3]	Route number[4]	Average daily traffic in 1926			Maximum daily traffic, total vehicles	Average daily traffic in 1931, total vehicles
			Trucks	Passenger cars	Total vehicles		
122....	N	T. R.	5	49	54	90	80
	S	S. A.	7	78	85	140	120
	E	T. R.	2	40	42	70	60
123....	N	T. R.	*	8	8	10	10
	E	T. R.	2	73	75	130	100
	W	T. R.	3	65	68	120	90
124....	N	T. R.	22	131	153	240	230
	S	S. A.	70	961	1,031	1,750	1,540
	W	S. A.	97	1,038	1,135	1,890	1,690
125....	N	T. R.	9	108	117	200	160
	S	S. A.	5	59	64	110	90
	E	S. A.	5	115	120	210	170
	W	S. A.	6	77	83	140	120
126....	N	T. R.	1	29	30	50	40
	S	T. R.	1	28	29	50	40
	E	T. R.	*	2	2	.....	.....
127....	N	S. A.	4	20	24	40	30
	S	T. R.	10	77	87	140	120
	E	S. A.	7	70	77	130	110
128....	E	S. A.	10	428	438	770	610
	W	S. A.	10	428	438	770	610
129....	S	T. R.	13	175	188	320	280
	E	S. A.	66	689	755	1,260	1,120
	W	S. A.	77	780	857	1,420	1,280
130....	N	S. A.	37	331	368	610	570
	S	S. A.	36	311	347	570	540
	W	T. R.	1	36	37	60	60
131....	N	S. A.	1	38	39	70	50
	S	S. A.	1	40	41	70	60
	E	T. R.	*	3	3	10	.....
132....	N	T. R.	5	71	76	130	110
	S	T. R.	13	137	150	250	220
	E	S. A.	74	728	802	1,330	1,190
	W	S. A.	61	621	682	1,130	1,020
133....	N	S. A.	15	110	125	200	200
	S	S. A.	15	110	125	200	200
134....	N	T. R.	11	166	177	300	250
	S	S. A.	16	253	269	460	370
	E	T. R.	5	98	103	180	140
	W	S. A.	8	183	191	330	270
	SW	T. R.	5	18	23	30	30
135....	E	S. A.	50	271	321	500	480
135....	W	S. A.	50	271	321	500	480
136....	N	S. A.	29	346	375	630	590
	S	S. A.	28	284	312	520	490
	E	T. R.	3	88	91	160	140
137....	S	S. A.	60	548	608	1,000	950
	E	S. A.	86	690	776	1,270	1,210
	W	T. R.	57	347	404	640	630
138....	N	S. A.	37	293	330	540	490
	S	S. A.	37	293	330	540	490
	W	T. R.	2	26	28	50	40
139....	N	S. A.	32	216	248	400	370
	S	S. A.	32	216	248	400	370
140....	N	S. A.	19	269	288	490	430
	S	S. A.	12	226	238	410	350
	E	T. R.	5	49	54	90	80
	W	T. R.	2	11	13	20	20
141....	N	S. A.	21	119	140	220	210
	S	S. A.	21	119	140	220	210
142....	N	S. A.	16	132	148	240	210
	S	S. A.	8	98	106	180	150
	W	T. R.	8	38	46	70	60
143....	N	S. A.	83	877	960	1,600	1,500
	E	S. A.	132	1,576	1,708	2,870	2,670
	W	S. A.	55	735	790	1,340	1,230
144....	N	T. R.	72	717	789	1,310	1,230
	S	T. R.	8	37	45	70	70
	E	S. A.	12	138	150	250	230
	W	S. A.	38	290	328	530	510
	SW	S. A.	45	576	621	1,050	970
145....	N	T. R.	8	123	131	220	200
	S	T. R.	9	127	136	230	200
	E	T. R.	17	148	165	270	250
	W	T. R.	17	128	145	240	220
146....	N	S. A.	26	312	338	570	530
	S	S. A.	26	318	344	580	540
	E	T. R.	*	10	10	20	20
	W	T. R.	*	1	1	.....	.....
147....	N	T. R.	4	56	60	100	80
	S	T. R.	1	10	11	20	20
	E	T. R.	10	66	76	120	110
	W	T. R.	11	123	134	220	190

APPENDIX III

Foreign Motor Vehicle Traffic at New Hampshire Traffic Survey Stations[1]

Average Daily Passenger Cars and Trucks, July 16 to October 15, 1926

Station[2]	Passenger cars				Motor trucks			
	Total[3]	Average daily New Hampshire traffic	Average daily foreign traffic	Per cent foreign traffic	Total[3]	Average daily New Hampshire traffic	Average daily foreign traffic	Per cent foreign traffic
1	5,824	1,532	4,292	73.7	208	162	46	22.1
2	5,606	1,166	4,440	79.2	141	111	30	21.1
3	2,948	1,253	1,695	57.5	101	97	4	4.0
4	484	312	172	35.5	28	27	1	2.6
5	1,730	1,284	446	25.8	121	110	11	8.7
6	541	240	301	55.6	30	24	6	21.6
7	3,871	1,243	2,628	67.9	317	242	75	23.8
8	3,177	1,439	1,738	54.7	216	178	38	17.7
9	3,560	1,876	1,684	47.3	310	268	42	13.6
10	3,420	1,830	1,590	46.5	228	201	27	11.7
11	4,116	1,976	2,140	52.0	244	216	28	11.3
12	3,986	2,304	1,682	42.2	218	210	8	3.8
13	2,550	1,204	1,346	52.8	142	131	11	7.6
14	2,278	1,360	918	40.3	147	140	7	4.5
15	2,000	1,134	866	43.3	122	117	5	4.0
16	2,678	1,596	1,082	40.4	110	108	2	2.1
17	1,054	499	555	52.7	44	43	1	2.8
18	1,088	512	576	52.9	52	49	3	5.2
19	1,486	465	1,021	68.7	32	30	2	5.6
20	1,114	245	869	78.0	12	12	.....	2.0
21	794	250	544	68.5	26	25	1	3.0
22	810	310	500	61.7	21	19	2	10.1
23	838	446	392	46.8	40	37	3	6.6
24	898	577	321	35.7	60	58	2	3.4
25	560	275	285	50.9	46	41	5	11.3
26	1,584	855	729	46.0	123	118	5	3.8
27	1,066	581	485	45.5	21	18	3	12.8
28	1,550	925	625	40.3	92	71	21	22.4
29	1,327	782	545	41.1	96	82	14	14.6
30	338	217	121	35.7	17	16	1	3.0
31	734	311	423	57.6	39	35	4	9.7
32	1,153	706	447	38.8	106	103	3	2.4
33	1,238	973	265	21.4	110	105	5	4.4
34	598	405	193	32.2	48	46	2	4.8
35	991	716	275	27.7	84	82	2	2.4
36	1,624	767	857	52.8	116	102	14	12.5
37	586	244	342	58.4	34	22	12	36.1
38	1,386	815	571	41.2	138	126	12	8.7
39	1,148	673	475	41.4	128	123	5	4.2
40	722	518	204	28.2	43	43	.....	0.2
41	580	401	179	30.9	48	47	1	1.6
42	2,208	1,550	658	29.8	218	211	7	3.4
43	918	235	683	74.4	36	14	22	62.0
44	776	304	472	60.8	52	38	14	27.5
45	1,362	786	576	42.3	80	69	11	13.3
46	631	253	378	59.9	24	18	6	24.5
47	762	382	380	49.9	52	48	4	8.6
48	1,041	458	583	56.0	70	54	16	23.0
49	673	291	382	56.8	46	42	4	8.9
50	656	213	443	67.6	29	25	4	15.5
51	900	456	444	49.3	38	35	3	7.9
52	763	348	415	54.4	37	35	2	6.7
53	898	477	421	46.9	64	60	4	5.5
54	1,356	488	868	64.0	64	60	4	5.8
55	1,531	1,014	517	33.8	156	147	9	5.9
56	1,319	860	459	34.8	78	71	7	8.9
57	1,574	801	773	49.1	92	86	6	6.6
58	690	240	450	65.2	40	37	3	7.1
59	870	544	326	37.5	34	33	1	2.9
60	1,786	1,229	557	31.2	183	174	9	5.0
61	766	205	561	73.2	38	17	21	56.1
62	1,360	918	442	32.5	116	112	4	3.2
63	1,632	493	1,139	69.8	125	101	24	19.0
64	1,076	553	523	48.6	53	40	13	23.7
65	1,962	967	995	50.7	123	112	11	8.7
66	974	392	582	59.8	59	52	7	12.4
67	615	189	426	69.2	16	14	2	12.1
68	916	289	627	68.5	60	53	7	11.9
69	898	212	686	76.4	18	16	2	11.3
70	1,676	580	1,096	65.4	48	46	2	4.7
71	527	214	313	59.4	24	22	2	7.8
72	752	558	194	25.8	54	51	3	4.9
73	544	282	262	48.2	25	23	2	7.2
74	652	155	497	76.2	34	30	4	10.7
75	1,202	218	984	81.9	20	19	1	5.6
76	564	283	281	49.8	28	27	1	3.0
77	940	449	491	52.2	101	98	3	2.5
78	632	324	308	48.8	19	19	.....	2.6

[1] Foreign traffic includes traffic of all motor vehicles not registered in New Hampshire.
[2] For location of stations see Figure 8.
[3] Total represents average daily passenger cars and average daily motor trucks passing station on all routes.

Foreign Motor Vehicle Traffic at New Hampshire Traffic Survey Stations[1]—Continued

Station [2]	Passenger cars				Motor trucks			
	Total [3]	Average daily New Hampshire traffic	Average daily foreign traffic	Per cent foreign traffic	Total [3]	Average daily New Hampshire traffic	Average daily foreign traffic	Per cent foreign traffic
79	574	334	240	41.8	66	62	4	5.4
80	2,216	448	1,768	79.8	150	90	60	40.0
81	1,933	825	1,108	57.3	76	55	21	27.6
82	1,773	856	917	51.7	130	114	16	12.2
83	535	425	110	20.6	42	41	1	3.5
84	215	160	55	25.5	44	41	3	6.2
85	312	186	126	40.4	16	16	.....	3.1
86	715	428	287	40.1	30	29	1	3.4
87	396	96	300	75.8	20	8	12	58.9
88	493	359	134	27.1	36	32	4	10.6
89	494	322	172	34.8	51	49	2	3.5
90	884	545	339	38.4	50	47	3	6.2
91	1,015	656	359	35.4	77	74	3	4.3
92	754	405	349	46.3	50	46	4	8.4
93	1,243	675	568	45.7	91	82	9	9.9
94	771	549	222	28.8	88	85	3	3.1
95	1,612	1,270	342	21.2	174	171	3	1.8
96	992	595	397	40.0	55	52	3	5.3
97	1,130	547	583	51.6	85	77	8	9.3
98	1,464	742	722	49.3	132	123	9	6.8
99	1,372	944	428	31.2	94	86	8	8.2
100	286	217	69	24.0	34	32	2	5.3
101	398	237	161	40.5	32	28	4	11.2
102	817	458	359	44.0	61	56	5	7.5
103	492	448	44	9.0	51	51	.....	0.0
104	1,160	280	880	75.9	84	51	33	39.3
105	616	284	332	53.9	64	58	6	10.0
106	1,688	1,242	446	26.4	95	91	4	4.3
107	348	333	15	4.4	81	81	.....	0.0
108	2,381	317	2,064	86.7	75	51	24	31.4
109	1,049	588	461	43.9	60	55	5	8.2
110	1,097	341	756	68.9	35	32	3	9.9
111	200	160	40	20.0	12	12	.....	0.0
112	151	138	13	8.8	20	20	.....	0.0
113	156	134	22	14.2	18	18	.....	2.7
114	264	16	248	93.9	37	37	.....	0.0
115	128	85	43	33.6	10	10	.....	2.5
116	54	36	18	32.9	4	4	.....	5.6
117	123	77	46	37.8	16	14	2	9.8
118	47	43	4	8.5	16	16	.....	1.6
119	83	64	19	22.9	14	14	.....	1.8
120	396	208	188	47.5	10	10	.....	4.8
121	291	148	143	49.3	23	23	.....	1.0
122	84	70	14	16.1	7	7	.....	7.1
123	73	50	23	31.4	2	2	.....	0.0
124	1,065	337	728	68.4	94	50	44	46.4
125	180	118	62	34.6	12	10	2	12.5
126	30	24	6	20.0	1	1	.....	33.3
127	84	45	39	46.0	10	10	.....	0.0
128	428	130	298	69.6	10	10	.....	0.0
129	822	566	256	31.1	78	74	4	4.8
130	339	279	60	17.8	37	37	.....	0.0
131	40	28	12	29.0	1	1	.....	0.0
132	778	608	170	21.8	76	73	3	4.2
133	110	91	19	17.3	15	14	1	3.5
134	359	214	145	40.3	22	20	2	10.0
135	271	199	72	26.7	50	46	4	8.0
136	359	260	99	27.5	30	27	3	10.9
137	792	430	362	45.7	102	95	7	7.1
138	306	71	235	76.8	38	30	8	21.8
139	216	65	151	70.1	32	18	14	45.1
140	278	254	24	8.7	19	19	.....	0.0
141	119	97	22	18.1	21	21	.....	0.0
142	134	114	20	14.8	16	16	.....	1.6
143	1,594	598	996	62.5	135	103	32	23.9
144	879	458	421	47.9	88	79	9	10.7
145	263	199	64	24.5	26	25	1	2.0
146	320	267	53	16.7	26	25	1	3.5
147	128	94	34	26.4	13	13	.....	0.0

APPENDIX IV

Motor Truck Traffic at New Hampshire Traffic Survey Stations

(Average Daily Traffic, July 16 to October 15, 1926 and Distribution of Loaded Trucks by Capacity Classes)

Station[1]	Direction[2]	Route number[3]	Average daily motor trucks							Station[1]	Direction[2]	Route number[3]	Average daily motor trucks						
			Total	Empty	Loaded trucks								Total	Empty	Loaded trucks				
					Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity						Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity
1	N	U. S. 1	208	84	124	77	31	10	6	19	E	S. A.	15	8	7	7			
	S	U. S. 1	182	72	110	68	28	9	5	20	N	105	10	6	4	3	1		
	W	Mass.110	27	12	15	9	4	1	1		S	U. S. 3	9	5	4	3		1	
2	N	U. S. 1	138	69	69	36	22	5	6		E	U. S. 3	5	3	2	2			
	S	U. S. 1	138	69	69	35	22	6	6	21	N	S. A.	16	9	7	7			
	E	T. R.	3	1	2	2					S	U. S. 3	20	11	9	8	1		
	W	T. R.	3	2	1	1					W	U. S. 3	17	11	6	5	1		
3	N	1-A	94	48	46	34	8	3	1	22	N	U. S. 3	21	12	9	7	2		
	S	T. R.	86	42	44	34	6	3	1		S	U. S. 3	18	10	8	6	2		
	E	1-A	22	12	10	8	2				W	T. R.	3	2	1	1			
4	N	T. R.	11	6	5	5				23	N	U. S. 3	38	21	17	15	2		
	E	U. S. 2	26	11	15	14	1				S	U. S. 3	40	22	18	16	2		
	W	U. S. 2	18	7	11	10	1				E	T. R.	2	2					
5	N	16	99	57	42	37	5			24	N	U. S. 3	57	26	31	28	3		
	S	U. S. 2	101	58	43	39	4				S	S. A.	8	3	5	5			
	W	U. S. 2	42	25	17	16	1				E	S. A.	12	5	7	7			
6	N	S. A.	6	4	2	2					W	U. S. 3	43	21	22	19	3		
	E	U. S. 2	25	11	14	13	1			25	N	U. S. 3	35	18	17	15	2		
	W	U. S. 2	29	14	15	14	1				S	U. S. 3	34	17	17	15	2		
7	N	U. S. 3	317	121	196	98	66	17	15		W	T. R.	23	12	11	9	2		
	S	U. S. 3	317	121	196	98	66	17	15	26	N	3-A	113	66	47	43	2	1	1
	W	T. R.	*								S	3-A	115	68	47	41	3	2	1
8	N-S	U. S. 3	216	81	135	63	39	23	10		W	4-B	18	12	6	4		2	
9	N	U. S. 3	310	111	199	123	55	13	8	27	S	3-A	8	4	4	2	1	1	
	S	U. S. 3	303	107	196	120	55	13	8		E	25	18	10	8	5	1	2	
	W	T. R.	8	4	4	3	1				W	25	16	9	7	5	1	1	
10	N	U. S. 3	213	92	121	88	24	7	2	28	S	T. R.	14	8	6	4	2		
	S	U. S. 3	226	97	129	94	25	8	2		E	U. S. 4	75	39	36	27	7	2	
	E	101-B	16	7	9	7	2				W	U. S. 4	95	50	45	31	12	2	
11	N-S	U. S. 3	244	116	128	83	26	15	4	29	S	10	21	9	12	9	2	1	
12	N-S	U. S. 3	218	98	120	93	20	6	1		E	U. S. 4	78	35	43	38	4	1	
13	N	U. S. 3	125	59	66	47	12	7			W	U. S. 4	94	40	54	46	6	1	1
	S	U. S. 3	140	66	74	53	13	7	1	30	N-S	U. S. 4	17	10	7	6	1		
	W	S. A.	20	11	9	7	2			31	N	U. S. 4	16	6	10	9	1		
14	N	T. R.	15	10	5	5					E	U. S. 4	33	12	21	20	1		
	E	U. S. 3	136	69	67	48	12	6	1		W	11	29	13	16	14	2		
	W	U. S. 3	143	71	72	53	12	6	1	32	E-W	U. S. 4	106	55	51	42	6	2	1
15	N	U. S. 3	109	47	62	50	9	3		33	N	106	51	25	26	19	4	3	
	S	U. S. 3	118	51	67	55	9	3			E	U. S. 4	59	28	31	27	3	1	
	W	S. A.	18	9	9	9					W	U. S. 4	109	51	58	47	7	4	
16	N	U. S. 3	84	40	44	34	9	1		34	S	4-A	24	14	10	9	1		
	S	U. S. 3	108	52	56	44	11	1			E	U. S. 4	35	17	18	14	3		1
	E	11	27	15	12	10	2				W	U. S. 4	36	17	19	16	2	1	
17	N	U. S. 3	38	16	22	17	4	1		35	S	T. R.	29	15	14	13	1		
	S	U. S. 3	39	18	21	16	3	1	1		E	U. S. 4	83	40	43	40	3		
	E	S. A.	12	6	6	6					W	U. S. 4	56	27	29	27	2		
18	N	U. S. 3	52	22	30	25	4	1		36	N	U. S. 4	115	49	66	40	15	10	1
	S	U. S. 3	51	22	29	24	4	1			S	U. S. 4	113	48	65	39	14	10	2
	W	T. R.	1	1							W	S. A.	4	2	2	1	1		
19	N	U. S. 3	22	10	12	9	2	1		37	N	9	28	11	17	15	2		
	S	U. S. 3	26	13	13	10	2	1			S	T. R.	*						

[1] For location of stations see Figure 8.
[2] Direction of route from station.
[3] All numbered routes are trunk-line highways. The United States routes are designated by the initials U. S., State-aid routes by S. A., and town roads by T. R.
* Less than one truck per day.

Motor Truck Traffic at New Hampshire Traffic Survey Stations—Continued

Station[1]	Direction[2]	Route number[3]	Average daily motor trucks						
			Total	Empty	Loaded trucks				
					Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity
37....	E	T. R.	5	2	3	3	.....	.....	.....
	W	9	36	14	22	20	2	.....	.....
38....	N	12	66	26	40	29	10	1	.....
	E	9 & 12	138	59	79	59	18	2	.....
	W	9	72	33	39	31	8	.....	.....
39....	N	10	88	34	54	27	17	10	.....
	S	9 & 10	128	53	75	43	21	11	.....
	E	9	41	21	20	16	4	.....	.....
40....	N	S. A.	26	9	17	13	3	1	.....
	S	T. R.	5	2	3	3	.....	.....	.....
	E	9	40	15	25	19	4	2	.....
	W	9	15	5	10	8	1	1	.....
41....	N	9 & 32	37	13	24	20	3	1	.....
	S	9 & 32	48	18	30	26	3	1	.....
	W	T. R.	12	5	7	7	.....	.....	.....
42....	E-W	9 & 103	218	97	121	92	19	10	.....
43....	N-S	10	36	13	23	16	5	2	.....
44....	E-W	10	52	18	34	25	6	2	1
45....	N	10	78	33	45	35	8	2	.....
	S	10	75	31	44	33	8	2	1
	W	T. R.	7	4	3	3	.....	.....	.....
46....	N	10	18	7	11	6	4	1	.....
	S	10 & 101	21	8	13	9	4	.....	.....
	W	101	8	3	5	4	1	.....	.....
47....	N	10	36	14	22	15	6	1	.....
	S	10	51	24	27	24	3	.....	.....
	W	T. R.	17	9	8	7	1	.....	.....
48....	N-S	10	70	35	35	24	10	1	.....
49....	N	10	37	24	13	11	2	.....	.....
	S	10	45	27	18	15	3	.....	.....
	E	T. R.	11	7	4	4	.....	.....	.....
50....	N	10	27	13	14	12	2	.....	.....
	S	10	21	10	11	9	2	.....	.....
	E	111	10	5	5	4	1	.....	.....
51....	N	10 & 25	33	15	18	15	2	1	.....
	S	10	27	12	15	13	2	.....	.....
	E	25	17	10	7	6	1	.....	.....
52....	N	10	25	12	13	12	1	.....	.....
	S	S. A.	17	7	10	7	1	2	.....
	W	10	32	15	17	12	3	2	.....
53....	N	10	44	28	16	15	.....	1	.....
	S	10	64	35	29	27	1	1	.....
	E	S. A.	21	10	11	11	.....	.....	.....
54....	S	105	19	10	9	8	.....	1	.....
	E	10 & 18	47	27	20	17	2	1	.....
	W	10 & 18	63	34	29	26	2	1	.....
55....	N	11 & 12	137	75	62	57	3	2	.....
	S	11 & 12	58	19	39	33	4	2	.....
	W	T. R.	116	73	43	42	1	.....	.....
56....	S	S. A.	19	6	13	12	1	.....	.....
	E	11	76	31	45	37	8	.....	.....
	W	11	60	26	34	26	8	.....	.....
57....	N	11	77	27	50	39	10	1	.....
	S	32 & 103	53	23	30	24	6	.....	.....
	W	11 & 32	53	16	37	28	9	.....	.....
58....	S	103-A	15	6	9	8	1	.....	.....
	E	11	25	8	17	15	2	.....	.....
	W	11	39	13	26	23	3	.....	.....
59....	N	11 & 28	32	14	18	15	2	1	.....
	S	28	8	3	5	5	.....	.....	.....
	E	11	28	12	16	13	2	1	.....
60....	N	11	113	63	50	31	16	2	1
	S	T. R.	26	17	9	8	1	.....	.....
	E	11 & 104	175	99	76	52	17	7	.....
	W	104	52	31	21	16	1	4	.....
61....	N	12	36	15	21	11	8	2	.....
	S	12	37	15	22	11	9	2	.....
	E	T. R.	2	1	1	1	.....	.....	.....
62....	N	12	112	57	55	46	8	1	.....
	S	12	61	31	30	23	6	1	.....
	W	T. R.	58	31	27	24	2	1	.....
63....	N	12 & 101	122	40	82	52	23	6	1
	S	12	72	21	51	32	13	5	1
	E	101	56	21	35	22	11	2	.....
64....	N	T. R.	19	10	9	8	1	.....	.....
	S	12	52	22	30	25	4	.....	1
	W	12	35	14	21	18	2	.....	1
65....	N	16	122	46	76	59	12	5	.....
	S	16-A	20	9	11	8	3	.....	.....
	E	16	103	37	66	51	11	4	.....
	W	T. R.	1	1	.....	.....	.....	.....	.....
66....	N	16	46	16	30	28	2	.....	.....
	S	16	48	17	31	29	2	.....	.....
	E	S. A.	24	10	14	13	1	.....	.....
67....	N	16	15	5	10	7	2	1	.....
	S	16	16	5	11	8	2	1	.....
	E	T. R.	2	1	1	1	.....	.....	.....
	W	T. R.	*	.....	.....	.....	.....	.....	.....
68....	N	16 & 25	44	25	19	15	3	1	.....
	S	16 & 28	39	17	22	18	4	.....	.....
	E	S. A.	36	20	16	12	4	.....	.....
69....	N	16 & 28	19	11	8	6	2	.....	.....
	S	16 & 28	15	9	6	5	1	.....	.....
	E	T. R.	3	2	1	1	.....	.....	.....
70....	N	16	25	12	13	12	1	.....	.....
	E	16	38	17	21	18	3	.....	.....
	W	18	33	16	17	15	2	.....	.....
71....	N	16	23	16	7	6	1	.....	.....
	S	16	23	16	7	6	1	.....	.....
	W	T. R.	1	1	.....	.....	.....	.....	.....
72....	N	16	42	17	25	22	3	.....	.....
	S	16	49	20	29	25	4	.....	.....
	E	T. R.	4	2	2	2	.....	.....	.....
	W	T. R.	12	5	7	6	1	.....	.....
73....	S	16	17	9	8	7	1	.....	.....
	E	S. A.	20	11	9	7	2	.....	.....
	W	26	13	7	6	5	1	.....	.....
74....	N	T. R.	2	.....	2	1	1	.....	.....
	E	18	34	21	13	9	4	.....	.....
	W	18	32	20	12	9	3	.....	.....
75....	E-W	18	20	11	9	8	1	.....	.....
76....	N	25	21	11	10	6	2	2	.....
	S	25	23	13	10	9	1	.....	.....
	W	111	11	5	6	4	1	1	.....
77....	N	T. R.	2	1	1	1	.....	.....	.....
	S	25	98	46	52	47	4	1	.....

Station[1]	Direction[2]	Route number[3]	Average daily motor trucks							Station[1]	Direction[2]	Route number[3]	Average daily motor trucks						
			Total	Empty	Loaded trucks								Total	Empty	Loaded trucks				
					Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity						Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity
77	E	25	102	48	54	49	4	1	.....	98	S	T. R.	*	.....	.....	.....	.....	.....	.....
78	N	25	10	6	4	3	1	.....	.....		E	101-A	132	64	68	55	10	3	.....
	S	25	17	11	6	5	1	.....	.....		W	101-A	132	64	68	55	10	3	.....
	E	107	11	9	2	2	.....	.....	.....	99	S	S. A.	24	11	13	10	1	1	1
79	E-W	26	66	29	37	35	2	.....	.....		E	101-C	77	46	31	28	1	2	.....
80	N	28	142	65	77	53	14	8	2		W	101-C	87	50	37	32	1	3	1
	S	28	141	64	77	53	14	8	2	100	S	T. R.	2	.....	2	2	.....	.....	.....
	E	T. R.	5	3	2	2	.....	.....	.....		E	102	34	19	15	13	1	1	.....
	W	T. R.	12	10	2	2	.....	.....	.....		W	102	33	19	14	13	1	.....	.....
81	N	28	71	26	45	22	11	10	2	101	N	109	32	16	16	13	3	.....	.....
	S	T. R.	4	1	3	1	1	1	.....		E	109	28	14	14	12	2	.....	.....
	E	28	72	29	43	22	11	8	2		W	102	5	2	3	2	1	.....	.....
	W	T. R.	4	2	2	2	.....	.....	.....	102	N-S	103	61	28	33	26	6	1	.....
82	N	28	135	55	80	56	18	5	1	103	N	106	49	22	27	16	5	6	.....
	S	S. A.	17	8	9	9	.....	.....	.....		S	106	20	10	10	8	2	.....	.....
	E	28	109	44	65	43	16	5	1		E	T. R.	33	15	18	10	4	4	.....
83	N	28	41	24	17	14	3	.....	.....	104	N-S	108	84	40	44	32	8	3	1
	S	28	40	24	16	13	3	.....	.....	105	N	108	64	37	27	21	4	2	.....
	W	T. R.	2	1	1	1	.....	.....	.....		S	108	42	24	18	13	3	2	.....
84	N-S	28	44	19	25	22	3	.....	.....		E	S. A.	23	14	9	8	1	.....	.....
85	N	28	15	7	8	8	.....	.....	.....	106	N	108	95	51	44	30	8	5	1
	S	T. R.	3	1	2	2	.....	.....	.....		S	108	91	49	42	28	8	5	1
	W	28	14	5	9	9	.....	.....	.....		E	T. R.	3	2	1	1	.....	.....	.....
86	N	28	16	9	7	6	1	.....	.....		W	T. R.	1	1	.....	.....	.....	.....	.....
	S	28	28	12	16	13	2	1	.....	107	E-W	110	81	49	32	18	11	3	.....
	E	S. A.	14	5	9	8	1	.....	.....	108	N	1-A	65	37	28	19	7	2	.....
	W	T. R.	1	1	.....	.....	.....	.....	.....		S	1-A	67	36	31	23	6	2	.....
87	N	32	20	9	11	9	1	1	.....		W	S. A.	18	10	8	7	1	.....	.....
	S	32	20	9	11	9	1	1	.....	109	N-S	3-A	60	26	34	28	5	1	.....
	E	T. R.	*	.....	.....	.....	.....	.....	.....	110	N	18 & 28	18	9	9	8	1	.....	.....
88	N	32	19	9	10	9	1	.....	.....		E	18 & 28	33	16	17	14	3	.....	.....
	S	32	35	16	19	17	2	.....	.....		W	T. R.	19	8	11	9	2	.....	.....
	E	T. R.	17	9	8	7	1	.....	.....	111	N	S. A.	10	6	4	4	.....	.....	.....
89	N	32	24	10	14	10	3	1	.....		S	S. A.	11	6	5	4	1	.....	.....
	S	32	49	23	26	21	4	1	.....		W	T. R.	2	1	1	1	.....	.....	.....
	W	S. A.	29	14	15	14	1	.....	.....	112	N-S	S. A.	20	11	9	7	2	.....	.....
90	S	32	22	9	13	11	2	.....	.....	113	N	T. R.	12	7	5	4	.....	1	.....
	E	103	28	10	18	15	2	1	.....		S	T. R.	9	5	4	4	.....	.....	.....
	W	32 & 103	50	19	31	26	4	1	.....		E	T. R.	4	2	2	2	.....	.....	.....
91	N	S. A.	25	12	13	9	3	1	.....		W	T. R.	7	4	3	3	.....	.....	.....
	E	101	54	19	35	29	3	3	.....		NW	T. R.	5	3	2	2	.....	.....	.....
	W	101	75	29	46	36	6	4	.....	114	N	S. A.	30	9	21	17	2	2	.....
92	N	T. R.	4	3	1	1	.....	.....	.....		S	S. A.	20	8	12	11	1	.....	.....
	S	T. R.	13	8	5	3	2	.....	.....		E	S. A.	24	9	15	10	4	1	.....
	E	101	36	18	18	15	2	1	.....	115	N	T. R.	5	3	2	2	.....	.....	.....
	W	101	46	22	24	19	4	1	.....		E	S. A.	10	4	6	6	.....	.....	.....
93	E-W	101	91	46	45	32	9	4	.....		W	T. R.	6	2	4	4	.....	.....	.....
94	N	101	75	37	38	25	9	4	.....	116	N	T. R.	1	.....	1	.....	1	.....	.....
	S	101	84	40	44	30	9	5	.....		S	T. R.	1	.....	1	1	.....	.....	.....
	E	T. R.	16	10	6	6	.....	.....	.....		E	T. R.	3	1	2	1	.....	1	.....
95	N	T. R.	2	1	1	1	.....	.....	.....		W	S. A.	3	1	2	1	.....	1	.....
	S	S. A.	36	19	17	16	1	.....	.....	117	N	S. A.	15	7	8	8	.....	.....	.....
	E	101	142	64	78	58	17	3	.....		E	S. A.	14	6	8	8	.....	.....	.....
	W	101	168	77	91	70	17	4	.....		W	T. R.	4	1	3	3	.....	.....	.....
96	N	T. R.	1	1	.....	.....	.....	.....	.....	118	N	S. A.	6	4	2	2	.....	.....	.....
	E	101	55	28	27	23	3	1	.....		S	S. A.	15	6	9	8	1	.....	.....
	W	101	54	27	27	23	3	1	.....		E	S. A.	11	4	7	6	1	.....	.....
97	N	108	47	26	21	15	3	2	1		W	S. A.	1	1	.....	.....	.....	.....	.....
	S	101 & 108	72	36	36	25	5	5	1	119	N	S. A.	12	5	7	7	.....	.....	.....
	E	101	51	24	27	18	3	4	2		S	S. A.	15	7	8	7	1	.....	.....
98	N	T. R.	1	.....	1	1	.....	.....	.....		E	T. R.	1	.....	1	1	.....	.....	.....

Motor Truck Traffic at New Hampshire Traffic Survey Stations—Continued

Station[1]	Direction[2]	Route number[3]	Average daily motor trucks							Station[1]	Direction[2]	Route number[3]	Average daily motor trucks						
			Total	Empty	Loaded trucks								Total	Empty	Loaded trucks				
					Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity						Total	½–1½ tons capacity	2–2½ tons capacity	3–4 tons capacity	5–7½ tons capacity
120	N	S. A.	9	4	5	4	1	.....	.....	134	E	T. R.	5	2	3	2	1	.....	.....
	S	T. R.	7	4	3	3	.....	.....	.....		W	S. A.	8	4	4	4	.....	.....	.....
	W	T. R.	5	3	2	2	.....	.....	.....		SW	T. R.	5	1	4	3	.....	1	.....
121	N	T. R.	17	7	10	9	1	.....	.....	135	E-W	S. A.	50	21	29	17	12	.....	.....
	S	T. R.	20	10	10	9	1	.....	.....	136	N	S. A.	29	16	13	9	3	1	.....
	E	T. R.	9	4	5	5	.....	.....	.....		S	S. A.	28	16	12	8	3	.....	1
122	N	T. R.	5	3	2	1	1	.....	.....		E	T. R.	3	1	2	2	.....	.....	.....
	S	S. A.	7	3	4	3	1	.....	.....	137	S	S. A.	60	38	22	17	2	2	1
	E	T. R.	2	.....	2	2	.....	.....	.....		E	S. A.	86	48	38	28	5	4	1
123	N	T. R.	*	.....	.....	.....	.....	.....	.....		W	T. R.	57	33	24	17	4	2	1
	E	T. R.	2	1	1	1	.....	.....	.....	138	N	S. A.	37	20	17	13	3	1	.....
	W	T. R.	3	1	2	2	.....	.....	.....		S	S. A.	37	20	17	13	3	1	.....
124	N	T. R.	22	7	15	13	2	.....	.....		W	T. R.	2	.....	2	2	.....	.....	.....
	S	S. A.	70	27	43	39	4	.....	.....	139	N-S	S. A.	32	16	16	15	1	.....	.....
	W	S. A.	97	36	61	55	6	.....	.....	140	N	S. A.	19	13	6	5	.....	.....	1
125	N	T. R.	9	4	5	4	1	.....	.....		S	S. A.	12	8	4	4	.....	.....	.....
	S	S. A.	5	3	2	1	1	.....	.....		E	T. R.	5	3	2	1	.....	.....	1
	E	S. A.	5	3	2	2	.....	.....	.....		W	T. R.	2	1	1	1	.....	.....	.....
	W	S. A.	6	2	4	4	.....	.....	.....	141	N-S	S. A.	21	12	9	6	3	.....	.....
126	N	T. R.	1	.....	1	1	.....	.....	.....	142	N	S. A.	16	7	9	8	1	.....	.....
	S	T. R.	1	.....	1	1	.....	.....	.....		S	S. A.	8	3	5	5	.....	.....	.....
	E	T. R.	*	.....	.....	.....	.....	.....	.....		W	T. R.	8	4	4	3	1	.....	.....
127	N	S. A.	4	2	2	1	.....	1	.....	143	N	S. A.	83	45	38	32	4	2	.....
	S	T. R.	10	6	4	3	.....	1	.....		E	S. A.	132	61	71	52	15	2	2
	E	S. A.	7	4	3	3	.....	.....	.....		W	S. A.	55	20	35	22	11	1	1
128	E-W	S. A.	10	7	3	3	.....	.....	.....	144	N	T. R.	72	35	37	29	7	1	.....
129	S	T. R.	13	6	7	7	.....	.....	.....		S	T. R.	8	5	3	3	.....	.....	.....
	E	S. A.	66	35	31	26	5	.....	.....		E	S. A.	12	7	5	4	1	.....	.....
	W	S. A.	77	42	35	30	5	.....	.....		W	S. A.	38	19	19	15	4	.....	.....
130	N	S. A.	37	20	17	9	7	1	.....		SW	S. A.	45	22	23	18	4	1	.....
	S	S. A.	36	20	16	8	6	2	.....	145	N	T. R.	8	5	3	3	.....	.....	.....
	W	T. R.	1	1	.....	.....	.....	.....	.....		S	T. R.	9	5	4	4	.....	.....	.....
131	N	S. A.	1	.....	1	1	.....	.....	.....		E	T. R.	17	10	7	7	.....	.....	.....
	S	S. A.	1	.....	1	1	.....	.....	.....		W	T. R.	17	9	8	8	.....	.....	.....
	E	T. R.	*	.....	.....	.....	.....	.....	.....	146	N	S. A.	26	9	17	12	4	1	.....
132	N	T. R.	5	2	3	3	.....	.....	.....		S	S. A.	26	10	16	11	4	1	.....
	S	T. R.	13	6	7	6	1	.....	.....		E	T. R.	*	.....	.....	.....	.....	.....	.....
	E	S. A.	74	29	45	39	5	1	.....		W	T. R.	*	.....	.....	.....	.....	.....	.....
	W	S. A.	61	24	37	31	5	1	.....	147	N	T. R.	4	2	2	2	.....	.....	.....
133	N-S	S. A.	15	5	10	7	2	1	.....		S	T. R.	1	1	.....	.....	.....	.....	.....
134	N	T. R.	11	3	8	7	1	.....	.....		E	T. R.	10	4	6	6	.....	.....	.....
	S	S. A.	16	6	10	9	1	.....	.....		W	T. R.	11	3	8	8	.....	.....	.....

APPENDIX V

Average Gross Weight of Loaded Motor Trucks by Capacity Classes at New Hampshire Traffic Survey Weight Stations

Station[1]	Direction[2]	Route number[3]	½–1½ ton trucks		2–2½ ton trucks		3–4 ton trucks		5–7½ ton trucks	
			Number of loaded trucks weighed[4]	Average gross weight	Number of loaded trucks weighed[4]	Average gross weight	Number of loaded trucks weighed[4]	Average gross weight	Number of loaded trucks weighed[4]	Average gross weight
				Pounds		Pounds		Pounds		Pounds
1	N	U. S. 1	145	5,040	82	13,870	8	16,580	6	19,230
	S	U. S. 1	136	5,110	79	13,980	8	16,580	6	19,230
	W	Mass. 110	11	5,240	3	11,030				
7	N	U. S. 3	181	5,430	143	13,840	16	16,180	20	20,180
	S	U. S. 3	181	5,430	143	13,840	16	16,180	20	20,180
	W	T. R.								
9	N	U. S. 3	268	5,110	130	13,680	19	15,400	18	18,390
	S	U. S. 3	265	5,110	129	13,670	19	15,400	18	18,390
	W	T. R.	5	6,460	1	14,600				
10	N	U. S. 3	116	5,120	34	12,960	7	19,090	1	21,800
	S	U. S. 3	118	5,170	36	13,120	7	19,090	1	21,800
	E	101 B	4	5,200	2	15,900				
12	N-S	U. S. 3	196	5,150	45	12,120	12	16,260	1	10,300
15	N	U. S. 3	111	4,740	19	12,050	4	15,950		
	S	U. S. 3	116	4,720	20	12,340	4	15,950		
	W	S. A.	13	5,910	1	17,800				
18	N	U. S. 3	47	5,030	10	11,960	2	12,800		
	S	U. S. 3	46	5,050	10	11,960	2	12,800		
	W	T. R.	1	4,300						
29	S	10	16	5,140	5	15,320	2	20,950		
	E	U. S. 4	81	4,870	7	12,560	1	15,500	1	19,900
	W	U. S. 4	91	5,050	12	13,710	3	19,130	1	19,900
31	N	U. S. 4	10	4,160						
	E	U. S. 4	44	4,410	2	9,800	1	16,100		
	W	11	34	4,490	2	9,800	1	16,100		
35	S	T. R.	15	3,970	3	9,970	1	14,700		
	E	U. S. 4	77	4,500	8	10,880	1	14,700		
	W	U. S. 4	62	4,630	5	11,420				
36	N	U. S. 4	69	4,710	36	12,670	19	19,150	3	18,270
	S	U. S. 4	64	4,810	35	12,500	19	19,150	3	18,270
	W	S. A.	3	4,370	1	18,500				
42	E-W	9 & 103	193	4,920	47	15,660	21	17,950		
45	N	10	72	5,100	16	13,070	5	16,020	1	22,900
	S	10	72	5,100	16	13,070	3	17,200	3	17,130
	W	T. R.								
46	N	10	10	5,090	8	9,620	1	14,500	1	16,500
	S	10 & 101	15	4,860	6	8,980	1	14,500	1	16,500
	W	101	7	4,090	2	11,550				
62	N	12	81	4,480	18	10,430	3	16,530		
	S	12	42	4,180	16	10,860	3	16,530		
	W	T. R.	37	4,730	4	9,680				
64	N	T. R.	8	7,500	3	11,230				
	S	12	55	4,470	8	11,440			4	21,220
	W	12	47	3,950	5	11,560			4	21,220
65	N	16	108	5,090	30	13,490	6	19,350		
	S	16 A	9	4,730	5	13,740	3	19,230		
	E	16	99	5,130	25	13,440	3	19,470		
	W	T. R.								
66	N	16	59	5,340	2	9,450				
	S	16	53	4,980	1	12,000				
	E	S. A.	26	6,420	3	10,300				
68	N	16 & 25	21	4,120	3	8,100	2	15,000		
	S	16 & 28	21	4,530	4	9,980	2	15,000		
	E	S. A.	10	4,590	1	15,600				
77	N	T. R.	1	3,700						
	S	25	104	4,510	11	14,320	3	13,500	1	20,100
	E	25	107	4,550	11	14,320	3	13,500	1	20,100
82	N	28	107	4,440	33	11,320	8	15,380	1	28,100
	S	S. A.	17	3,790						
	E	28	92	4,520	33	11,320	8	15,380	1	28,100
92	N	T. R.	2	3,000						
	S	T. R.	7	4,360	4	17,100				
	E	101	27	5,190	5	12,800	2	14,200		
	W	101	32	5,140	9	14,710	2	14,200		
95	N	T. R.	1	3,500	2	12,000				
	S	S. A.	18	4,290	1	7,900				
	E	101	140	5,370	41	11,990	10	14,940	1	9,300
	W	101	157	5,260	40	11,890	10	14,940	1	9,300
97	N	108	26	4,070	9	14,140	4	19,050		
	S	101 & 108	49	3,960	14	14,250	15	19,820		
	E	101	35	3,710	7	13,570	13	19,500		
98	N	T. R.	61	4,620						
	S	T. R.								
	E	101 A	57	5,650	12	13,160	7	18,800	2	22,350
	W	101 A	110	4,740	18	13,120	7	18,800	2	22,350
143	N	S. A.	70	4,130	5	11,640	3	17,730	1	24,600
	E	S. A.	117	4,300	25	10,080	3	17,730	2	18,950
	W	S. A.	47	4,540	20	9,740	1	13,300		

[1] For location of stations see Figure 8.
[2] Direction of route from station.
[3] All numbered routes are trunk-line highways. The United States routes are shown by the initials U. S., State-aid routes by S. A., and town roads by T. R.
[4] Total number of loaded trucks on each route during three 10-hour observations.

APPENDIX VI

Traffic Classification of the New Hampshire Trunk-line Highway System

Highway section	Highway route number[1]	Miles	Average daily traffic 1926[2]			Average daily traffic 1931[2]			Average daily traffic 1936[2]		Classification[4]
			Total motor vehicles	Total motor trucks	Total trucks of 3 to 7½-ton capacity[3]	Total motor vehicles	Total motor trucks	Total trucks of 3 to 7½-ton capacity	Total motor vehicles	Total motor trucks	
Portsmouth to Massachusetts line	U. S. 1 (F)	14.7	5,800	162	26	9,100	250	43	12,700	360	A
Nashua to Massachusetts line	U. S. 3 (F)	3.5	4,188	317	48	6,500	500	76	9,200	700	A
Manchester to Concord	U. S. 3 (F)	16.2	3,906	228	22	6,100	360	33	8,600	500	A
Nashua to Manchester	U. S. 3 (F)	16.4	3,533	246	33	5,500	380	48	7,700	540	A
Concord to Franklin	U. S. 3-4 (F)	14.0	2,784	142	9	4,300	220	13	6,100	310	A
Franklin to Laconia	U.S.3-11 (F)	10.4	2,188	118	8	3,400	180	13	4,800	260	A
Dover to Rochester	16 (F)	9.8	2,021	113	11	3,200	180	17	4,400	250	A
Manchester to Massachusetts line	28 (F)	23.1	1,951	108	12	3,000	170	18	4,300	240	A
Laconia to Meredith	U.S.3-11 (F)	9.8	1,932	73	.....	3,000	110	.....	4,200	160	A
Hampton to Portsmouth[5]	1 A-101 C	16.3	1,925	28	7	3,000	40	10	4,200	60	C
Durham to Dover	4 A-108 (F)	3.9	1,747	93	9	2,700	150	14	3,800	200	A
Manchester to Manchester east city line	101 (F)	2.5	1,741	168	6	2,700	260	9	3,800	370	A
Hopkinton to Concord	9-103 (F)	6.6	1,697	152	14	2,600	240	22	3,700	330	A
Portsmouth to Dover	U. S. 4 (F)	9.3	1,665	114	19	2,600	180	31	3,600	250	A
Nashua to Milford	101 A (F)	9.5	1,567	132	8	2,400	210	13	3,400	290	A
Bristol to East Hebron[5]	3 A (F)	9.0	1,491	113	.....	2,200	170	.....	3,000	230	C
Lebanon to West Lebanon[5]	U.S.4-10 (F)	2.6	1,459	75	.....	2,300	120	.....	3,200	160	A
Berlin to Gorham[5]	16 (F)	5.9	1,457	99	.....	2,300	160	.....	3,200	220	A
Winchester to Keene	10	12.7	1,425	76	.....	2,100	110	.....	2,800	150	B
Keene to Swanzey north town line	12 (F)	1.1	1,418	112	.....	2,100	170	.....	2,800	220	B
Glen to jct. with town road north of Conway[5]	16-18 (F)	8.4	1,385	38	.....	2,100	60	.....	2,800	80	C
Franklin to Bristol	3 A (F)	12.0	1,370	91	.....	2,000	140	.....	2,700	180	B
Lebanon to jct. E. of Lebanon	U.S.4-10 (F)	1.5	1,354	94	.....	2,100	150	.....	3,000	210	B
Milford to Wilton Center	101 (F)	5.0	1,334	91	9	2,000	140	13	2,700	180	B
Plymouth to Profile House[5]	U. S. 3 (F)	32.1	1,331	19	.....	2,000	30	.....	2,700	40	C
Franklin to Franklin town line	U.S.4-11 (F)	2.6	1,264	106	.....	2,000	160	.....	2,800	230	B
E. Kingston to Massachusetts line[5]	108 (F)	9.0	1,244	84	5	1,900	120	7	2,500	170	C
Exeter to Hampton	101 C	5.8	1,219	78	6	1,900	120	.....	2,700	170	B
Sunapee Harbor to Vermont line	11, 12-32 (F)	17.3	1,216	59	.....	1,800	90	.....	2,400	120	B
Exeter to Manchester east city line	101 (F)	27.1	1,213	98	.....	1,900	150	.....	2,700	220	B
Franklin town line to Potter Place[5]	U.S.4-11 (F)	9.3	1,135	89	.....	1,700	130	.....	2,300	180	C
Hanover to West Lebanon	10 (F)	4.2	1,111	70	.....	1,700	100	.....	2,200	140	B
Concord to jct. with 28 and U. S. 4	U. S. 4-9 (F)	9.9	1,097	72	6	1,700	110	10	2,400	160	B
Keene to jct. with S. A. Chesham[5]	101 (F)	7.3	1,070	75	7	1,600	110	9	2,100	150	C
Littleton to Twin Mountain[5]	10-18 (F)	12.8	1,069	50	.....	1,600	70	.....	2,100	100	C
Exeter to Stratham	101-108 (F)	3.2	1,067	72	12	1,600	110	17	2,100	140	B
Glen to Twin Mountain[5]	18	29.9	1,046	29	.....	1,600	40	.....	2,100	60	C
Meredith to Plymouth[5]	U.S.3-25 (F)	16.9	1,043	43	.....	1,600	70	.....	2,300	90	A
Dover to point 6 mi. W[5]	U. S. 4-9 (F)	6.0	1,040	83	.....	1,600	130	.....	2,300	180	C
Center Harbor to Meredith[5]	25 (F)	4.7	1,030	99	.....	1,600	160	.....	2,300	220	A
Canaan to jct. E. of Lebanon[5]	U. S. 4 (F)	12.0	948	78	.....	1,400	120	.....	1,900	160	D
Keene to jct. of 101 and 12 west	12 (F)	18.2	948	67	.....	1,500	100	.....	2,100	150	C
Claremont to jct. with 101	11-12[7]	19.0	948	64	.....	1,400	100	.....	1,900	130	C
Lisbon to jct. S. A. east	10 (F)	1.5	930	64	.....	1,400	100	.....	1,900	130	C
Plymouth to West Plymouth	3 A-25 (F)	3.0	918	18	.....	1,400	30	.....	1,800	40	C
Rochester to Sanbornville	16 (F)	18.5	910	47	.....	1,400	70	.....	1,800	90	C
Jct. 16 Conway to jct. with T. R.[5]	28 (F)	2.6	900	19	.....	1,300	30	.....	1,800	40	D
Glen to Jackson[5]	16 (F)	2.7	895	25	.....	1,300	40	.....	1,800	50	D
Massachusetts line to Swanzey N. town line	12 (F)	17.6	879	47	.....	1,300	70	.....	1,800	90	C
Hopkinton to Lower Village	103 (F)	9.0	878	61	.....	1,300	90	.....	1,800	120	C
Winchester to Massachusetts line	10	10.8	869	47	5	1,300	70	10	1,700	90	C
Woodsville to jct. with 25 S. Haverhill	10-25 (F)	7.8	867	33	.....	1,300	50	.....	1,700	70	C
Whitefield to Lancaster to Groveton	U. S. 3 (F)	17.1	834	30	.....	1,200	40	.....	1,700	60	C
Gilsum N. town line to jct. with 9 N. Keene	10-101	11.0	829	88	19	1,200	130	30	1,700	170	C
Peterboro to S. A. Chesham	101 (F)	11.7	816	54	.....	1,200	80	.....	1,600	110	D
Newport to jct. with T. R. to Northville	10	1.6	809	51	.....	1,200	80	.....	1,600	100	C
Manchester to Milford	101	13.6	799	75	6	1,200	110	10	1,600	150	C
Maine line to jct. 18 and T. R.	18-28 (F)	4.6	799	28	.....	1,200	40	.....	1,600	60	C

[1] The United States routes are shown by the initials U. S., (F) indicates Federal-aid system.
[2] Average daily motor vehicle traffic for the period July 16 to October 15 of each year.
[3] Total daily motor trucks of 3 to 7½ ton capacity not shown where less than 5 per day.
[4] Classification based on following class limits except as indicated in footnote 5.

Classification	Average daily motor vehicles		
	1926	1931	1936
A—Major 1	over 1,500	over 1,500	over 1,500
B—Major 2	500–1,500	over 1,500	over 1,500
C—Major 3	500–1,500	500–1,500	over 1,500
D—Medium 1	500–1,500	500–1,500	500–1,500
E—Medium 2	less than 500	500–1,500	500–1,500
F—Minor 1	less than 500	less than 500	500–1,500
G—Minor 2	less than 500	less than 500	less than 500

[5] Classification of these sections on which traffic as shown is lower than or in excess of classification limits is based upon consideration of total traffic, total motor truck traffic, number of large-capacity trucks, connections with other routes, and abnormality of 1926 traffic due to construction, detours, or condition of highway.
[6] Estimated traffic.
[7] Federal-aid route from junction of 12 and 101 to Vermont line at Bellows Falls.

Traffic Classification of the New Hampshire Trunk-line Highway System—Continued

Highway section	Highway route number[1]	Miles	Average daily traffic 1926[2]			Average daily traffic 1931[2]			Average daily traffic 1936[2]		Classification[4]
			Total motor vehicles	Total motor trucks	Total trucks of 3 to 7½-ton capacity[3]	Total motor vehicles	Total motor trucks	Total trucks of 3 to 7½-ton capacity	Total motor vehicles	Total motor trucks	
Sanbornville to jct. T. R. North Conway	16-28 (F)	42.0	766	23	.....	1,100	30	.....	1,500	50	D
Peterboro to T. R. to Ipswich	101 (F)	1.5	757	46	.....	1,100	70	.....	1,500	90	C
Portsmouth to jct. with 108	101 (F)	8.7	747	51	10	1,100	80	15	1,500	100	D
Alton Bay to Rochester	11 (F)	18.9	745	27	.....	1,000	40	.....	1,300	50	D
Lakeport to Alton Bay Upper Jct	11 (F)	16.7	741	27	.....	1,100	40	.....	1,500	50	C
Berlin to Milan[5]	16	6.6	739	49	.....	1,000	70	.....	1,300	80	C
Woodsville to Lisbon	10 (F)	10.6	737	29	.....	1,100	40	.....	1,500	60	D
Jct. with S. A. to U. Village to jct. with 32[5]	9	1.5	713	40	.....	1,100	60	.....	1,400	80	D
Jct. with 11 near Guild to Lower Village	32-103 (F)	22.4	709	44	.....	1,100	70	.....	1,400	90	D
Profile House to Twin Mt	U. S. 3 (F)	12.6	693	5	.....	1,000	10	.....	1,400	10	D
E. Hebron to W. Plymouth	3 A (F)	5.0	689	8	.....	1,000	10	.....	1,400	20	D
Littleton to Vermont line	18 (F)	4.3	682	33	.....	1,000	50	.....	1,400	70	D
Wilton Center to T. R. to Ipswich	101 (F)	10.4	676	36	.....	1,000	50	.....	1,400	70	D
Jefferson Highlands to Gorham	U. S. 2 (F)	13.0	656	42	.....	980	60	.....	1,300	80	D
Littleton to jct. with S. A	10 (F)	7.7	653	44	.....	970	70	.....	1,300	90	D
Hanover to jct. with 25	10 (F)	30.1	643	31	.....	960	50	.....	1,300	60	D
Colebrook to The Balsams	26	10.5	640	66	.....	950	100	.....	1,300	130	D
Wolfeboro Falls to Wolfeboro Center	28 (F)	3.0	638	28	.....	950	40	.....	1,300	60	D
Sunapee Harbor to Potter Place	11 (F)	17.0	629	31	.....	940	50	.....	1,300	60	D
Maine line to E. jct. with 16	U. S. 2 (F)	9.4	619	33	.....	920	50	.....	1,200	70	D
Hopkinton to jct. of 9 & 32	9-32 (F)	17.0	617	37	.....	920	60	.....	1,200	70	D
Durham to Stratham	108 (F)	7.8	616	47	.....	920	70	.....	1,200	90	D
Keene to Vermont line	9	16.9	605	49	.....	900	70	.....	1,200	100	D
Keene to jct. at Upper Village[5]	9	23.9	600	44	.....	890	70	.....	1,200	90	E
T. R. to Northville to jct. with U. S. 4 E. of Lebanon	10	20.7	598	27	.....	890	40	.....	1,200	50	D
Whitefield to Twin Mt	U. S. 3 (F)	8.7	592	18	.....	880	30	.....	1,200	40	D
Newport to Gilsum north town line	10–101	22.7	581	19	.....	860	30	.....	1,200	40	D
Wentworth to W. Plymouth	25 (F)	13.3	570	20	.....	800	30	.....	1,000	40	D
Lancaster to Vermont line[5]	U. S. 2 (F)	1.7	567	24	.....	840	40	.....	1,100	50	C
Jct. with U. S. 3 to jct. with U. S. 4	28	8.7	564	41	.....	840	60	.....	1,100	80	D
6 mi. W. of Dover to jct. with 28	U. S. 4-9 (F)	21.1	557	36	.....	830	50	.....	1,100	70	D
Exeter to E. Kingston	108 (F)	5.4	536	47	.....	800	70	.....	1,100	90	D
Center Harbor to W. Ossipee[5]	25 (F)	18.2	525	12	.....	730	20	.....	910	20	E
Jackson to E. jct. with U. S. 2[5]	16 (F)	20.3	515	23	.....	720	30	.....	890	40	E
Groveton to Colebrook	U. S. 3 (F)	26.2	498	35	.....	700	50	.....	860	60	E
Lancaster to Jefferson Highlands	U. S. 2 (F)	10.1	478	21	.....	710	30	.....	960	40	E
Profile House N. to jct. with 10	105	9.6	474	14	.....	710	20	.....	950	30	E
Wentworth to Haverhill	25 (F)	18.4	466	19	.....	650	30	.....	810	30	E
Ossipee to Wolfeboro Center	28 (F)	6.2	460	16	.....	680	20	.....	920	30	E
The Balsams to Errol	26	11.2	443	13	.....	620	20	.....	770	20	E
Berlin to W. Milan	110	11.0	429	81	.....	600	110	.....	740	140	E
Peterboro to Massachusetts line[5]	32 (F)	16.9	415	20	.....	620	30	.....	830	40	F
Jct. with 12 to jct. with S. A. to Alstead	101	5.0	413	56	.....	570	80	.....	720	100	E
Milan to Errol[5]	16	22.3	379	17	.....	530	20	.....	660	30	F
Rochester to Northwood[5]	104	14.0	378	52	.....	530	70	.....	660	90	F
Raymond to E. Kingston	109	12.9	363	28	.....	500	40	.....	630	50	E
Danbury to Canaan[5]	U. S. 4 (F)	14.0	355	17	.....	530	20	.....	710	30	F
Laconia to jct. with U. S. 4[5]	106	23.6	342	42	.....	480	60	.....	590	70	E
Danbury to Bristol	4 B	10.0	325	18	.....	480	30	.....	650	40	F
Nashua to Derry	102	10.8	318	34	.....	470	50	.....	640	70	F
Peterboro N. to jct. with 9	32 (F)	19.8	285	21	.....	400	30	.....	500	40	F
Alton Bay to Wolfeboro Falls	28 (F)	13.3	271	14	.....	400	20	.....	540	30	F
Danbury to Potter Place	U. S. 4 (F)	7.4	265	16	.....	400	20	.....	530	30	F
Jct. of U. S. 4 to Alton	28 (F)	19.1	248	25	.....	340	40	.....	430	40	G
Moultonboro to Wolfeboro Falls	107	18.0	245	11	.....	340	20	.....	420	20	G
Jct. with 10 to jct. with S. A. to Alstead	101	10.4	135	8	.....	190	10	.....	230	10	G
Granite State Park Road	16 A	3.5	128	20	.....	190	30	.....	260	40	G
Newbury to jct. with 11	103 A	8.0	123	15	.....	180	20	.....	250	30	G
Wentworth to jct. with 10	111	14.7	102	11	.....	140	20	.....	180	20	G
Derry to jct. with 109	102	13.3	81	5	.....	120	10	.....	160	10	G
Jct. of U. S. 3 to Four Corners	101 B	8.3	77	16	.....	120	20	.....	150	30	G
Northwood to Durham[6]	4 A	13.3	.....	.....	.....	.....	.....	.....	.....	.....	G
Dover to Maine line[6]	9 (F)	2.9	.....	.....	.....	.....	.....	.....	.....	.....	G
Newcastle Road[6]	1 B	4.0	.....	.....	.....	.....	.....	.....	.....	.....	G
Sunapee Harbor to jct. with 32[6]	.....	3.6	.....	.....	.....	.....	.....	.....	.....	.....	G
Colebrook to West Stewartstown	U. S. 3	9.6	54	4	.....	75	10	.....	100	10	G